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Environmental Management - Grand Junction Office

UMTRA Project

Radiation Protection Program

September 2007

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DOE-EM/GJ610-2007

RADIATION PROTECTION PROGRAM
MOAB UMTRA Project
Moab, Utah

Revision 0

September 2007

Prepared by
Energy*Solutions*
Under Task Order No. DE-AT30-07CC00014

Prepared for the
U.S. Department of Energy
Grand Junction Office
Grand Junction, Colorado

ENERGYSOLUTIONS
Federal Services

DOE-EM/GJ610-2007

RADIATION PROTECTION PROGRAM

Revision # 0

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- [X] New
- [ ] Title Change
- [ ] Revision
- [ ] Rewrite
- [ ] Cancellation

Effective Date: September 2007

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1.0 IMPLEMENTATION PLAN SUMMARY

1.1 PURPOSE

The U.S. Department of Energy Office of Environmental Management (DOE−EM) identifies Code of Federal Regulations (CFR) 10 CFR 835, (*Occupational Radiation Protection*[i]) as the driver for this Radiation Protection Program (RPP).

This RPP establishes radiation protection standards, limits, and program requirements for protecting individuals from occupational exposures to ionizing radiation resulting from work performed for the U.S. Department of Energy Office of Environmental Management (DOE−EM) related to the MOAB Remediation Project through contract # DE-AM09-05SR22422.

This Radiation Protection Program (RPP) is incorporated into the seven guiding principles and five core functions of Integrated Safety Management. This RPP has been designed to ensure radiological control requirements, defined in 10 CFR 835, are incorporated into applicable facility design, and conduct of radiological work at the MOAB and Crescent Junction sites.

The purpose of this Radiation Protection Program (RPP) is to formally commit in policy and deed to the implementation of the requirements of Title 10 *Code of Federal Regulations* Part 835 (10 CFR 835), "Occupational Radiation Protection" as noted in this RPP.

1.2 HISTORICAL INFORMATION

The Atlas Moab Uranium Mill site (Moab Site) is a former uranium-ore processing facility located about three miles northwest of Moab in Grand County, Utah. The entire site covers approximately 400 acres of land, approximately 130 of which is covered by the tailings pile.

Originally the property and facility were owned by the Uranium Reduction Company (URC) and was regulated by the Atomic Energy Commission. In 1956, URC began operations of the Moab mill. In 1962, the Atlas Minerals Company acquired URC and operated the mill until operations ceased in 1984. From 1956 to 1984, uranium mill tailings were deposited on site in an unlined impoundment. In 1988, decommissioning of the mill began, and from 1989 to 1995 an interim cover was placed on the impoundment. In 1996, Atlas Mineral Co. declared bankruptcy and ownership was transferred to the MOAB Reclamation Trust.

In October 2001, control of the Moab site was transferred from the Moab Reclamation Trust to DOE. Since this time, site characterization, maintenance, and groundwater interim actions have been ongoing.

In June 2007, Energy*Solutions* was awarded the MOAB Remediation Project, and has developed this RPP to address the full scope of activities to be conducted and the processes to implement 10CFR835 requirements.

With this revision, the scope of this RPP includes all activities and facilities under the control of the Remediation Action Contractor (RAC) Energy*Solutions*, the activities conducted by the Technical Assistance Contractor (TAC) S&K Aerospace, and any subcontractor performing work for the RAC and/or TAC at the project sites, with the exception of work conducted under a U.S. Nuclear Regulatory Commission (NRC) or Agreement State license.

The content of this RPP is designed to be commensurate with the nature of activities performed under the authority of DOE−EM.

1.3 SCOPE

This RPP is intended to address the full scope of activities associated with the transfer of the entire tailings pile (16.9M tons) from MOAB, to Crescent Junction, both located in the state of Utah. These activities will consist of design, procurement, construction, commissioning and operations to remediate the entire 16.9M tons of Residual Radioactive Material (RRM).

In synopsis, this RRP is applicable to all activities related to Engineering & Design, Procurement & Construction, Commissioning & Operational Startups, Excavation, material handling, loading, on-site transportation, disposal, site maintenance, water management and vicinity property remediation.

2.0 GENERAL INFORMATION

This RPP is submitted to meet the Price-Anderson Amendments Act requirements of 10 CFR 835, *Occupational Radiation Protection,* as amended June 8th, 2007. Each requirement contained in the Rule (10 CFR 835) has been addressed in Appendix A of the RPP. The RAC classifies its compliance status as being in one of the following three categories:

Full Compliance – indicates that the requirement is documented as a commitment in policy and that implementing plans, protocols, and procedures will be in place and functioning as each activity governed by the Rule commences. These required implementing documents and work practices will be verifiable through inspection.

Not Applicable (NA) – indicates the RAC will not engage in that particular activity governed by a particular portion of the Rule. When a Rule is determined Not Applicable, the reason for this determination will be provided under the "DESCRIPTION OF COMPLIANCE STATUS" section for that Rule provided in Appendix A.

Conditional Compliance – means that the RAC will provide a program in full compliance (as defined above) as modified and agreed to by the DOE; i.e., full compliance is concurrent with DOE's approval of this RPP.

Conditionally compliant and Not Applicable items are listed and discussed in Table 2-1, Parts 1, 2, and 3.

Table 2-1 (Part 1)
Items Presented as Conditional Compliance Status

Item	Condition	Brief Description and Narrative
Appendix A, Footnote 5	Conditionally Compliant	June 8, 2007 10 CFR 835 amendment revises the allowable levels of radon exposure. The RAC will use the new limits in association with the existing "radon exemption." The RAC expects the radon exemption to be formally granted or extended in a timely manner. Reference: Exemption GJPO-10CFR835-EX-02 – Appendix B of this document.
Appendix D	Conditionally Compliant	Appropriate category for tailings The RAC interprets tailings to be most closely and accurately categorized as "associated decay products," in the "U-nat, U-235, U-238 and associated decay product" portion of the Appendix D table. Unless concentrated values of individual radionuclides are encountered the values of 1000/5000 dpm/100cm^2 (alpha), removable and total respectively, will be applied.

Table 2-1 (Part 2)
Items Presented as Conditional Compliance Status

§ 835.2	Conditionally Compliant	Terms used to describe various aspects of radiation dose Due to the recent and dramatic change in dose terminology, The RAC will continue to use and reference documents and tools that use the terminology associated with the pre-2007 version of 10 CFR 835.
§ 835.101(a)	Conditionally Compliant	Requirement to conduct activities under an approved RPP All of the RAC activities performed under contract to DOE will be conducted in compliance with this RPP, when approved by DOE. Future RPP revisions and subsequent DOE approvals will fall under the normal provisions of the Rule.
§ 835.101(f).01	Conditionally Compliant	Compliance with the June 8, 2007 amended Rule by June 8, 2010. The RAC has committed to plans, schedules, and other measures contained in Sections 1 – 13 of this Plan for achieving compliance with the June 8, 2007 amendment no later than July 8th, 2010.
§ 835.104	Conditionally Compliant	Finalization of the formal media control process The RAC is initially using a combination of self-generated along with "Blue Sheeted" and/or other transitional procedures and documents from previous UMTRA Project and Legacy Management Contractors. These procedures have received numerous assessments and have been found to be commensurate and appropriate to the radiological hazard. The RAC intends to formally adopt or replace these written documents per the schedule provided in Section 10.0, *Activities, Milestones, and Schedules*.
§ 835.402(b)(1)	Conditionally Compliant	External Dosimetry DOELAP The RAC has provided plans, schedules, and milestones in sections 1 – 13 of this Plan for achieving full compliance with 10CFR835 including DOE Laboratory Accreditation for personnel dosimetry.
§ 835.402(d)(1)	Conditionally Compliant	Internal Dosimetry DOELAP The RAC has provided plans, schedules, and milestones in sections 1 – 13 of this Plan for achieving full compliance with 10CFR835 including DOE Laboratory Accreditation for a Radiobioassay Program.

Table 2-1 (Part 3)
Items Presented as Conditional Compliance Status

§ 835.1002(c)	Conditionally Compliant	Airborne Rad Material ALARA In addition to confinement and ventilation, which is used where practical and appropriate, the RAC uses dust suppression and material handling techniques designed to maintain airborne radioactive material to levels that are ALARA.
Appendix C	Not Applicable	Immersion DACs Radionuclides presented in this appendix are not found on the Moab UMTRA Project – thus the appendix is not applicable.
§ 835.3 (c)	Not Applicable	DOE Responsible if no Contractor is responsible The RAC is the responsible DOE Contractor
§ 835.402(b)(2)	Not Applicable	External DOELAP Equivalency The RAC is not seeking this; DOELAP equivalence determination (See 835.402[b][1] of Parts Conditionally Compliant)
§835.402(d)(2)	Not Applicable	Internal DOELAP Equivency DOELAP equivalency determination (See 835.402(d)(1) of Parts Conditionally Compliant)
§ 835.1304 (a)(b)	Not Applicable	Nuclear accident dosimetry There are no conditions under which there can be a credible event.

2.1 PLAN CONTENT AND FORMAT

The content of this plan is based upon the required elements of 10 CFR 820, *Procedural Rules for DOE Nuclear Activities,* and 10CFR835, *Occupational Radiation Protection.*

3.0 SCOPE AND APPLICABILITY

The scope of this RPP covers any DOE activity associated with the completion of the scope of work defined under the Contract and conducted on behalf of the DOE by the RAC and TAC and all subcontractors and suppliers that have the potential to result in the following:

- Occupational exposures (as defined by 10 CFR 835), to ionizing radiation
- Exposure to minors and members of the public (as defined in 10 CFR 835.2)
- Emergency exposures (as defined in 10 CFR 835.1302)
- Exposures to embryo/fetus of a declared pregnant worker (as defined in 10 CFR 835.2).

The scope of the RPP applies to all RAC project activities at locations, facilities, and sites that are within the contract scope of work. Consequently, all personnel shall comply with the applicable radiation protection procedures that implement this RPP. Implementing guidance and requirements contained in this RPP are intended to help itemize and clarify radiation protection responsibilities and performance expectations.

3.1 RECOGNIZED EXCLUSIONS

Specific applicability of exclusions include those listed in 10 CFR 835.1(b). No other exclusions are recognized.

3.2 OPERATIONAL TASKS

10 CFR 835.101(d) states, "The RPP shall specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP." These include the following:

1) Environmental Monitoring
2) Environmental Remediation
3) Environmental Restoration
4) Project Site Disposition
5) Vicinity Property Remediation
6) Materials Handling
7) Construction and Facilities Operations

3.3 RADIOLOGICAL HAZARD ASSESSMENT

Radiological hazards associated with uranium mill by-product (tailings) are related to the generic categories of direct gamma and beta radiation exposure; inhalation or ingestion of airborne radioactivity and gases; ingestion of loose surface contamination, contaminated soil, and other contaminated environmental media; and direct transfer of radioactivity into the blood stream through wounds. The best data available indicates that the tailings material contains nCi (1E-09 Ci) per gram quantities of uranium decay products. Radiological hazards and levels found during the remediation of several large tailings sites (e.g, Grand Junction and Rifle, Colorado; Mexican Hat and Monticello, UT) included airborne radioactive particulates in quantities ranging from a fraction of a Derived Air Concentration (DAC) up to a few DACs; Radon concentrations ranging up to several Working Levels; dose rates ranging from background to 2 mrem/hr. Similar conditions are expected during the MOAB remediation.

3.4 Policy

With submittal of this RPP, the RAC establishes its policy towards the applicable requirements of 10 CFR 835, and for the conduct of its radiological operations in a manner that ensures a safe work environment for employees, DOE employees, subcontractors, visitors, and the general public.

This document is applicable to all RAC and TAC employees, subcontractor personnel in accordance with the provisions of standard subcontract clauses, and DOE personnel (and employees of other federal agencies performing activities at the MOAB and/or Crescent Junction).

The RAC is committed to continuing improvement, with respect to optimizing and maintaining excellence in radiological control. Excellent performance is evident when individual doses are maintained well below regulatory limits, radioactive materials are well controlled, and uncontrolled releases of radioactive material are prevented.

3.5 Principles

1. The RAC uses passive and active engineered controls within the operational and facility designs, and implements administrative controls and personal protective equipment, where practical, to ensure that radiation exposures are ALARA and that radioactive material is contained for effective personnel protection.
2. Radiation exposure to the work force and the public is controlled such that exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit.
3. Each individual performing work for the MOAB contract around or with radioactive material, is expected to demonstrate responsibility and accountability through an informed, disciplined, and cautious attitude toward radioactive material.
4. Line Management
    a) Shall be responsible for compliance with the requirements of 10 CFR 835 and the content of this RPP.
    b) With the assistance of radiological protection personnel, Line Management (project managers and supervisors) shall identify and integrate applicable radiological protection aspects into facility and operational designs, work planning and execution.
    c) Line Management will notify the radiological protection organization (i.e., ES&H Manager or Radiation Protection Manager) of physical and/or operational conditions that could result in significant changes in radiological hazards (i.e. a revised method or procedure or unanticipated radiological conditions). Notifications initiate radiological protection evaluations and/or modifications to monitoring, posting, Personal Protective Equipment and/or entry controls.
5. No RAC or TAC employee, DOE employee, subcontractor, or visitor shall take or cause to be taken any action inconsistent with the requirements of this plan or any program, plan, schedule, or other process established by 10 CFR 835.
6. Nothing in this document shall be construed as limiting actions that may be necessary to protect health and safety.
7. The content of the RPP shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the ALARA process to occupational exposure.
8. This RPP specifies the existing and/or anticipated tasks that are intended to be within the scope of the RPP. Except as identified in the following note, tasks outside the scope of this RPP shall not be initiated until an update of the RPP is approved by DOE.
9. The content of this RPP addresses, but is not necessarily limited to, each requirement in 10 CFR 835.

10. This RPP includes plans, schedules, and other measures for achieving compliance with regulations of 10 CFR 835 if applicable.
11. An update of this RPP shall be submitted to DOE:
    a) When a change or an addition to the RPP is made,
    b) Prior to the initiation of a task not within the scope of the RPP, and
    c) Within 180 days of the effective date of any modifications to 10 CFR 835.

Updates to this RPP shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date.

4.0 LIST OF APPLICABLE STANDARDS

There are no standards or guides adopted or invoked by the RAC, beyond 10 CFR 835, as part of this RPP.

5.0 BASELINE CONDITIONS

Not Applicable

6.0 ADDITIONAL ACTIVITIES

Not Applicable

7.0 GRADED APPROACH

Plans, protocols, procedures, and their implementation will be commensurate with the anticipated hazards and will comply with 10 CFR 835.

8.0 RESOURCE ASSESSMENT

Not Applicable

9.0 PRIORITIZATION

The RAC recognizes the applicable elements of 10 CFR 835 as being equal in importance.

10.0 ACTIVITIES, MILESTONES, AND SCHEDULES

The RAC will be in full compliance with this RPP upon its approval by the DOE.

10.1 PLANS, POLICIES, AND PROCEDURES

The RAC anticipates that the plans, policies, and procedures that have been adopted from the previous UMTRA and Legacy Management Contractors, along with those being developed in-house by the RAC, will be used to support and govern any work activity as that activity commences. Additionally, the RAC will revise and/or adopt these plans, policies, and procedures by a formalized process/format by May 1, 2008. Any remaining documents that have been adopted by the "blue sheet" or other similar methodology, but not formally revised and/or adopted by this date, will be considered null and void at that point.

10.2 External and Internal DOELAP

The RAC intends to seek DOE Laboratory Accreditation as soon as practical. The DOLAP application along with the supporting documents, calculations, and systems, required to attain this accreditation will not be completed until the spring of 2008. The RAC commits to completing and/or resolving this process by May 1, 2008 such that it will be fully compliant with the June 8, 2007 revision of 10CFR835 by June 8, 2010. Due to the compensatory actions and conditions discussed in Section 12 of this RPP this approach allows the RAC to remain fully compliant with requirements of the Rule. The RAC further commits to keeping the DOE apprized of its progress and status concerning this milestone.

10.3 AUDITS

Internal audits of the RPP, including examination of program content and implementation, shall be conducted through a process that ensures that all functional elements of the program are reviewed no less frequently than every 36 months. As a matter of practice, functional areas will be selected, scheduled, and reviewed on a quarterly basis. Annually, a broad scope review will be conducted.

The RPP audit schedule will be based on the functional elements outlined in DOE G 441.1-1B, 03-01-07, or its succeeding equivalent. These elements are presented below (Table 10-1) for convenience.

Table 10-1
10 CFR 835 Functional Elements

Functional Element	10 CFT 835 Regulatory Provision
1. Organization and Administration	Subpart B
2. As Low As Reasonably Achievable Program	101(c), Subpart K
3. External Dosimetry	401(a),(b)
4. Internal Dosimetry	401(a), 402(c),(d)
5. Area Monitoring and Control	
a. Area Radiation Monitoring	401(a)
b. Airborne Radioactivity Monitoring	209, 401(a), 403
c. Contamination Monitoring and Control	401(a), Subpart L
d. Instrumentation Calibration and Maintenance	401(b)
6 Radiological Controls	
a. Radiological Work Planning	501(d), 1001(b), 1003
b. Entry and Exit Controls	Subpart F
c. Radiological Work controls	Subpart F, 1003
d. Posting and Labeling	Subpart G
e. Release of Materials and Equipment	1101
f. Sealed Radioactive Source Accountability and Control	Subpart M
7. Emergency Exposure Situations	1301, 1302
8. Nuclear Accident Dosimetry	1304
9. Records	Subpart H
10. Reports to Individuals	Subpart I
11. Radiation Safety Training	Subpart J

11.0 EXEMPTIONS

The RAC has written this plan with the expectation of having the DOE Exemption Decision No. GJPO-10CFR835-EX-02 "Radon Exemption", as approved by the Assistant Secretary of Environment, Safety and Health, signed on March 11, 2004, extended or specifically granted to the RAC. This exemption is attached as Appendix B of this RPP. The RAC is implementing this exemption consistent with 10 CFR 835, as amended June 8, 2007. The RAC is committed to preparing any necessary documentation and submittals, as identified by the DOE, beyond this RPP in order to attain the use of the radon exemption.

12.0 COMPENSATORY ACTIONS

The present condition of the tailings pile is such that dose and dose rates are anticipated to remain very low. This condition will not change until the RAC begins to remove the protective cover from the tailings pile, which will not occur until well into the project; allowing the RAC ample time to develop and pilot much of its radiological protection protocols. Additionally, even when the cover is removed, acute dose conditions are not likely to be found. Thus the RAC will have ample opportunity to monitor and respond to changing workplace conditions by revising work protocols and monitoring strategies to optimize personnel exposure following the ALARA process.

Conditions beyond the pile (the area surrounding the pile and vicinity properties) are such that anticipated dose and dose rates will never be significant; that is it is unlikely to present any dose rate conditions leading to an assessed exposure greater than the various monitoring thresholds defined in 10 CFR 835.402(b).

10 CFR 835 elements related to DOELAP accreditation and the scheduling of this important milestone, are, in the meantime, compensated for by using radioanalytical vendors who currently hold DOELAP accreditations through other DOE Prime Contractors in the same radionuclides and radiation types as those found on UMTRA. Additionally, the RAC will commit to completing and documenting an internal technical review of its dosimetry and workplace monitoring program prior to engaging in heavy remediation activities or by May 1, 2008 (whichever comes first).

Conditionally Compliant items have been called out and summarized in Section 2.0, *General Information*, and are specifically addressed in each compliance statement in Appendix A.

Other items, clearly not in the RAC scope, have been addressed as non-applicable (N/A), thus requiring no compensatory discussion or actions.

13.0 TRACKING

Not Applicable

14.0 REFERENCES USED FOR DEVELOPMENT OF THIS RPP

1. 10 CFR 820, *Procedural Rules for DOE Nuclear Activities*
2. 10 CFR 835, *Occupational Radiation Protection*
3. DOE Standard 1082-94, "*Preparation, Review, and Approval of Implementation Plans for Nuclear Safety Requirements*."
4. DOE Contract # DE-AM09-05SR22422
5. DOE G 441.1-1B, 03-01-07, *RADIATION PROTECTION PROGRAMS GUIDE for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection*

ALARA STATEMENT

The RAC is firmly committed to having a radiological control program of the highest quality that is guided by a formalized As Low As Reasonably Achievable (ALARA) program of plans and metrics. The ALARA program is designed to be commensurate with the nature of the RAC work activities to be performed.

ALARA POLICY

The RAC policy is to conduct radiological operations in a manner that promotes the health and safety of all employees, subcontractors, and the general public. In achieving this objective, the RAC policy is to make every reasonable effort to maintain occupational, environmental, and public radiation exposure from U.S. Department of Energy (DOE) activity levels that are ALARA. The ALARA philosophy is predicated upon the theory that any radiation exposure, however small, carries with it some risk which should be balanced by an offsetting benefit. The management of the RAC affirms the following:

1. Personal radiation exposure shall be maintained ALARA.

2. Radiation exposure of the work force and public shall be controlled using a graded approach such that radiation exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit.

3. Each person involved in radiological work is expected to demonstrate responsibility and accountability through an informed, disciplined, and cautious attitude toward radiation and radioactivity.

4. Excellent performance is evident when site missions are completed and radiation exposures are maintained well below regulatory limits, contamination is minimized, radioactivity is well controlled, and radiological spills or uncontrolled releases are prevented.

5. Continuing improvement is essential to excellence in radiological control.

6. It is the responsibility of the RAC Management and the responsibility of all workers to comply with this Radiation Protection Program and use ALARA principles during all work activities.

Formal ALARA Plans and Measures

The RAC has formal ALARA plans and takes measures to address the following:

1. Management commitment
2. Assignment of responsibilities and authorities
3. Administrative performance goals and measures
4. Radiological performance goals and measures
5. ALARA training
6. Plans and procedures
7. Internal audits and assessments
8. Optimization methodology
9. Radiological design review
10. Radiological work planning
11. Records.

APPENDIX A
RADIATION PROTECTION PROGRAM
COMPLIANCE STATEMENTS

10 CFR 835: Revised June 8, 2007 STATUS: Full Compliance

The RAC commits to comply with all parts 10 CFR 835 as they apply to the DOE activities performed within the scope of this Radiation Protection Program as provided in the June 8, 2007 version of 10 CFR 835.

10 CFR 835: App. A STATUS: Full Compliance

REQUIREMENT STATEMENT:

Appendix provides DAC values for various Radionuclides.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC adopts and complies with Appendix A, its preamble and footnotes 1- 4 in its entirety.

10 CFR 835: App A, Footnote 5 STATUS: Conditional Compliance

REQUIREMENT STATEMENT

These values are appropriate for protection from radon combined with its short-lived decay products and are based on information given in ICRP Publication 65: Protection Against Radon-222 at Home and at Work and in DOE-STD-1121-98: Internal Dosimetry. The values given are for 100% equilibrium concentration conditions of the short-lived radon decay products with the parent. To allow for an actual measured equilibrium concentration or a demonstrated equilibrium concentration, the values given in this table should be multiplied by the ratio (100%/actual %) or (100%/demonstrated %), respectively. Alternatively, the DAC values for Rn-220 and Rn-222 may be replaced by 2.5 working level (WL) and 0.83 WL, respectively, for appropriate limiting of decay product concentrations. A WL is any combination of short-lived radon decay products, in one liter of air without regard to the degree of equilibrium that will result in the ultimate emission of 1.3 E+05 MeV of alpha energy.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC implements a program that allows for the references and options provided in footnote 5 to Appendix A of 10 CFR 835. Additionally, the RAC is implementing the "radon exemption" addressed in Section 11 of this Plan, as modified to conform with 10 CFR 835, Appendix A, and specifically footnote 5.

10 CFR 835: App. B [Reserved] STATUS: NA

REQUIREMENT STATEMENT:

The Section has been reserved by the DOE.

DESCRIPTION OF COMPLIANCE STATUS:

The section does not require a compliance statement.

10 CFR 835: App. C STATUS: Not Applicable

REQUIREMENT STATEMENT (Preamble, Appendix A, Second Paragraph):

Appendix C to Part 835— DERIVED AIR CONCENTRATION (DAC) FOR WORKERS FROM EXTERNAL EXPOSURE DURING IMMERSION IN A CLOUD OF AIRBORNE RADIOACTIVE MATERIAL

DESCRIPTION OF COMPLIANCE STATUS:

Appendix B and it preamble and footnote is not applicable to the RAC activities under the Program.

10 CFR 835: Appendix D STATUS: Full Compliance

REQUIREMENT STATEMENT (footnote 1, Appendix D):

Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC applies the surface contamination limits independently for both alpha- and beta-gamma-emitting nuclides when they exist together.

10 CFR 835: Appendix D STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

Appendix D to Part 835--SURFACE CONTAMINATION VALUES

The data presented in appendix D are to be used in identifying and posting contamination and high contamination areas in accordance with § 835.603(e) and (f) and identifying the need for surface contamination monitoring and control in accordance with § 835.1101 and 1102.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses and adopts Appendix D in its entirety to identify and post contamination and high contamination areas in accordance with § 835.603(e) and (f) and for identifying the need for surface contamination monitoring and control in accordance with § 835.1101 and 1102. In regards to how Appendix D is applicable to tailings material; the RAC interprets tailings to be most closely and accurately categorized as "associated decay products," in the "U-nat, U-235, U-238 and associated decay product" portion of the Appendix D table. Unless concentrated values of individual radionuclides are encountered the values of 1000/5000 (dpm/100cm^2), removable and total respectively, will be applied.

10 CFR 835: Appendix E STATUS: Full Compliance

REQUIREMENT STATEMENT:

Appendix E to Part 835--VALUES FOR ESTABLISHING SEALED RADIOACTIVE SOURCE ACCOUNTABILITY AND RADIOACTIVE MATERIAL POSTING AND LABELING REQUIREMENTS

The data presented in appendix E are to be used for identifying accountable sealed radioactive sources and radioactive material areas as those terms are defined at § 835.2(a), establishing the need for radioactive material area posting in accordance with § 835.603(g), and establishing the need for radioactive material labeling in accordance with § 835.605.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses Appendix E, in its entirety for identifying accountable sealed radioactive sources and radioactive material areas as those terms are defined at § 835.2(a), and establishing the need for radioactive material area posting in accordance with § 835.603(g), and establishing the need for radioactive material labeling in accordance with § 835.605.

10 CFR 835: 1 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

General. The rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC recognizes that the rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.

10 CFR 835: 1 (b)(1) - (7) STATUS: Full Compliance

REQUIREMENT STATEMENT:

(b) Exclusion. Except as provided in paragraph (c) of this section, the requirements in this part do not apply to:

(b) Exclusion. Except as provided in paragraph (c) of this section, the requirements in this part do not apply to:

(1) Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act;
(2) Activities conducted under the authority of the Deputy Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106-65;
(3) Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations.
(4) DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government;
(5) Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs; or
(6) Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety and Security Officer.
(7) Radioactive material transportation not performed by DOE or a DOE contractor.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC recognizes that the requirements in this do not apply to (1) Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act; (2) Activities conducted under the authority of the Deputy

Administrator for Naval Reactors, as described in Pub. L. 98-525 and 106-65; (3) Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations. (4) DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government; (5) Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs; or (6) Radioactive material on or within material, equipment, and real property which is approved for release when the radiological conditions of the material, equipment, and real property have been documented to comply with the criteria for release set forth in a DOE authorized limit which has been approved by a Secretarial Officer in consultation with the Chief Health, Safety and Security Officer. (7) Radioactive material transportation not performed by DOE or a DOE contractor.

10 CFR 835: 1 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Occupational doses received as a result of excluded activities and radioactive material transportation, listed in paragraphs (b)(1) through (b)(4) and (b)(7) of this section, shall be included to the extent practicable when determining compliance with the occupational dose limits at §§ 835.202 and 835.207, and with the limits for the embryo/fetus at § 835.206. Occupational doses resulting from authorized emergency exposures and planned special exposures shall not be considered when determining compliance with the dose limits at §§ 835.202 and 835.207.

DESCRIPTION OF COMPLIANCE STATUS:
The RAC recognizes that occupational doses received as a result of excluded activities and radioactive material transportation, as listed in paragraphs (b)(1) through (b)(4) and (b)(7) of this section, shall be considered when determining compliance with the occupational dose limits at §§ 835.202 and 835.207, and with the limits for the embryo/fetus at § 835.206. Occupational doses resulting from authorized emergency exposures and planned special exposures shall not be considered when determining compliance with the dose limits at §§ 835.202 and 835.207.

10 CFR 835: 1 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:
The requirements in subparts F and G of this part do not apply to radioactive material transportation by DOE or a DOE contractor conducted: (1) Under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures, or (2) In accordance with Department of Transportation regulations or DOE orders that govern such movements.

DESCRIPTION OF COMPLIANCE STATUS:
The RAC understands that the requirements in subparts F and G of this part do not apply to radioactive material transportation by DOE or a DOE contractor conducted: (1) Under the continuous observation and control of an individual who is knowledgeable of and implements required exposure control measures, or (2) In accordance with Department of Transportation regulations or DOE orders that govern such movements.

10 CFR 835: 2 STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

(a) As used in this part: (defined terms not copied here); (b) As used in this part to describe various aspects of radiation dose: (defined terms not copied here); (c) Terms defined in the Atomic Energy Act and not defined in this part are used consistent with the meanings given in the Act.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC accepts the definitions of general terminology in section 10 CFR 835.2(a) and the definitions of dosimetry terminology in section 10 CFR 835.2(b) without exception beyond noting that the RAC will use references and documents that were written under the dosimetric nomenclature associated with the pre-2007 version of 10CFR835. The RAC recognizes that terms defined in the Atomic Energy Act and not defined in this part are used consistent with the meanings given in the Act.

10 CFR 835: 3 (a)(1)(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

No person or DOE personnel SHALL take or cause to be taken any action inconsistent with the requirements of:

(1) this part; or

(2) any program, plan, schedule, or other process established by this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC requires that all personnel may only take actions or cause actions to be taken that are consistent with the requirements of 10 CFR 835, or any program, plan, schedule, or other process established by 10 CFR 835.

10 CFR 835: 3 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

With respect to a particular DOE activity, contractor management SHALL be responsible for compliance with the requirements of this part.

DESCRIPTION OF COMPLIANCE STATUS:

With respect to all DOE activities conducted under Contract #DE-AM09-05SR22422, the RAC management is responsible for compliance with the requirements of 10 CFR 835.

10 CFR 835: 3 (c) STATUS: Not Applicable

REQUIREMENT STATEMENT:

Where there is no contractor for a DOE activity, DOE SHALL ensure implementation of and compliance with the requirements of this part.

DESCRIPTION OF COMPLIANCE STATUS:

This requirement is not applicable to the RAC; it is directly applicable to DOE.

10 CFR 835: 3 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Nothing in this part SHALL be construed as limiting actions that may be necessary to protect health and safety.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC does not construe the requirements in 10 CFR 835 as limiting any actions that are necessary to protect health and safety.

10 CFR 835: 3 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For those activities that are required by 10 CFR 835.102, 835.901(e), 835.1202(a), and 835.1202(b), the time interval to conduct these activities may be extended by a period not to exceed 30 days to accommodate scheduling needs.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may extend the time interval to conduct the activities required by 10 CFR 835.102, 835.901(e), 835.1202(a), and 835.1202(b) by a period not to exceed 30 days.

10 CFR 835: 4 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Unless otherwise specified, the quantities used in the records required by this part SHALL be clearly indicated in special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units. The SI units, becquerel (Bq), gray (Gy), and Sv (Sv) are only provided parenthetically in this part for reference with scientific standards.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC records required by 10 CFR 835 will be maintained in the special units of curie, rad, roentgen, rem, or dpm including multiples and subdivisions of these units. The SI units, becquerel (Bq), gray (Gy), and Sv (Sv) may be provided parenthetically for reference with scientific standards.

10 CFR 835: 101 (a) STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

A DOE activity SHALL be conducted in compliance with a documented radiation protection program (RPP) as approved by the DOE.

DESCRIPTION OF COMPLIANCE STATUS:

All RAC activities performed under contract to DOE will be conducted in compliance with this RPP, when approved by DOE. Future RPP revisions and subsequent DOE approvals will fall under the normal provisions of the Rule.

10 CFR 835: 101 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The DOE MAY direct or make modifications to a RPP.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC acknowledges DOE's authority to direct or make modification to an RPP.

10 CFR 835: 101 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The content of each RPP shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC RPP is commensurate with the nature of the activities performed under the contract and includes formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.

10 CFR 835: 101 (d) .01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

The RPP SHALL specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC RPP specifies the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP.

10 CFR 835: 101 (d) .02 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except as provided in 10 CFR 835.101(h), any task outside the scope of a RPP SHALL not be initiated until an update of the RPP is approved by DOE.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will perform no tasks outside the scope of the RPP until an update of the RPP is approved by DOE, except under conditions defined in 10 CFR 835.101(h).

10 CFR 835: 101 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The content of the RPP SHALL address, but SHALL not necessarily be limited to, each requirement in this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC RPP addresses all applicable requirements in 10 CFR 835.

10 CFR 835: 101 (f) STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

The RPP shall include plans, schedules, and other measures for achieving compliance with regulations of this part. Unless otherwise specified in this part, compliance with the amendments to this part published on June 8, 2007 shall be achieved no later than July 8, 2010.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC has committed to plans, schedules, and other measures contained in Sections 1 – 13 of this Plan for achieving compliance with the June 8, 2007 amendment no later than July 8th, 2010.

10 CFR 835: 101 (g) STATUS: Full Compliance

REQUIREMENT STATEMENT:

An update of the RPP shall be submitted to DOE: (1) Whenever a change or an addition to the RPP is made; (2) Prior to the initiation of a task not within the scope of the RPP; or (3) Within 180 days of the effective date of any modifications to this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will submit an update of the RPP to DOE whenever: (1) Whenever a change or an addition to the RPP is made; (2) Prior to the initiation of a task not within the scope of the RPP; or (3) Within 180 days of the effective date of any modifications to this part.

10 CFR 835: 101 (h).01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Changes, additions, or updates to the RPP may become effective without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will implement changes, additions, or updates to the RPP without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of this part.

10 CFR 835: 101 (h) .02 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Proposed changes that decrease the effectiveness of the RPP SHALL not be implemented without submittal to and approval by the Department.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not implement proposed changes to the RPP that decrease the effectiveness of the RPP without submittal to and approval by the Department.

10 CFR 835: 101 (i) STATUS: Full Compliance

REQUIREMENT STATEMENT:

An initial RPP or an update SHALL be considered approved 180 days after its submission unless rejected by DOE at an earlier date.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC considers the RPP as approved 180 days following submission to DOE unless rejected by DOE at an earlier date.

10 CFR 835: 102 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Internal audits of the radiation protection program, including examination of program content and implementation, shall be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC conducts internal audits, reviewing program content and implementation, of all functional elements of the radiation protection program every 36 months or less.

10 CFR 835: 103 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of this part SHALL have the appropriate education, training, and skills to discharge these responsibilities.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will ensure that individuals responsible for developing and implementing measures necessary for ensuring compliance have the appropriate education, training, and skills to discharge these responsibilities.

10 CFR 835: 104 STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

Written procedures SHALL be developed and implemented as necessary to ensure compliance with this part, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC has developed and implemented written procedures that are commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to the hazards.

The RAC is initially using a combination of self-generated, "Blue Sheeted" and/or other transitional procedures from previous UMTRA Project and Legacy Management Contractors. These procedures have received numerous assessments and have been found to be commensurate and appropriate to the radiological hazard. The RAC intends to formally adopt or replace these written documents per the schedule provided in Section 10.0, *Activities, Milestones, and Schedules*.

10 CFR 835: 202 (a) (1) – (4) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except for planned special exposures conducted consistent with § 835.204 and emergency exposures authorized in accordance with § 835.1302, the occupational dose received by general employees shall be controlled such that the following limits are not exceeded in a year:
(1) A total effective dose of 5 rems (0.05 Sv);
(2) The sum of the equivalent dose to the whole body for external exposures and the committed equivalent dose to any organ or tissue other than the skin or the lens of the eye of 50 rems (0.5 Sv);
(3) An equivalent dose to the lens of the eye of 15 rems (0.15 Sv); and
(4) The sum of the equivalent dose to the skin or to any extremity for external exposures and the committed equivalent dose to the skin or to any extremity of 50 rems (0.5 Sv).

DESCRIPTION OF COMPLIANCE STATUS:

Except for planned special exposures conducted consistent with 10 CFR 835.204 and emergency exposures authorized in accordance with 10 CFR 835.1302, the RAC controls the occupational dose received by general employees such that: (1) A total effective dose of 5 rems (0.05 Sv); (2) The sum of the equivalent dose to the whole body for external exposures and the committed equivalent dose to any organ or tissue other than the skin or the lens of the eye of 50 rems (0.5 Sv); (3) An equivalent dose to the lens of the eye of 15 rems (0.15 Sv); and (4) The sum of the equivalent dose to the skin or to any extremity for external exposures and the committed equivalent dose to the skin or to any extremity of 50 rems (0.5 Sv).

10 CFR 835: 202 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

All occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance with § 835.204 and emergency exposures authorized in accordance with § 835.1302, shall be included when demonstrating compliance with §§ 835.202(a) and 835.207.

DESCRIPTION OF COMPLIANCE STATUS:

Except doses resulting from planned special exposures conducted in compliance with 10 CFR 835.204 and emergency exposures authorized in accordance with 10 CFR 835.1302, the RAC will include all occupational doses received during the current year when demonstrating compliance with 10 CFR 835.202(a) and 835.207.

10 CFR 835: 202 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs shall not be included in dose records or in the assessment of compliance with the occupational dose limits.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC does not include doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs in dose records or in the assessment of compliance with the occupational exposure limits.

10 CFR 835: 203 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The total effective dose during a year shall be determined by summing the effective dose from external exposures and the committed effective dose from intakes during the year.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC determines the effective dose during a year by summing the effective dose from external exposures and the committed effective dose from intakes during the year.

10 CFR 835: 203 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Determinations of the effective dose shall be made using the radiation and tissue weighting factor values provided in § 835.2.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC determines the effective dose by using the radiation and tissue weighting factor values provided in § 835.2.

10 CFR 835: 204 (a) (1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in § 835.202(a), provided that each of the following conditions is satisfied:

(1) The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limits in § 835.202(a) are unavailable or impractical;
(2) The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and
(3) Joint written approval is received from the appropriate DOE Headquarters program office and the Secretarial Officer responsible for environment, safety and health matters.

DESCRIPTION OF COMPLIANCE STATUS:

A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in 10 CFR 835.202(a), provided that each of the following conditions is satisfied: (1) The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limits in § 835.202(a) are unavailable or impractical; (2) The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and (3) Joint written approval is received from the appropriate DOE Headquarters program office and the Secretarial Officer responsible for environment, safety and health matters.

10 CFR 835: 204 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Prior to requesting an individual to participate in an authorized planned special exposure, the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits SHALL be determined.

DESCRIPTION OF COMPLIANCE STATUS:

Prior to requesting an individual to participate in an authorized planned special exposure, The RAC will determine the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits.

10 CFR 835: 204 (c) (1) – (2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

An individual shall not receive a planned special exposure that, in addition to the doses determined in § 835.204(b), would result in a dose exceeding the following:
(1) In a year, the numerical values of the dose limits established at § 835.202(a); and
(2) Over the individual's lifetime, five times the numerical values of the dose limits established at § 835.202(a).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not authorize an individual to receive a planned special exposure that, in addition to the doses determined in 10 CFR 835.204(b), would result in a dose; (1) exceeding the dose limits established in 10 CFR 835.202(a) in a year, and (2) Over the individual's lifetime, five times the numerical values of the dose limits established at § 835.202(a).

10 CFR 835: 204(d)(1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Prior to a planned special exposure, written consent shall be obtained from each individual involved. Each such written consent shall include:
(1) The purpose of the planned operations and procedures to be used;
(2) The estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and
(3) Instructions on the measures to be taken to keep the dose ALARA considering other risks that may be present.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will obtain written consent from each individual involved in a planned special exposure and each written consent will include: (1) The purpose of the planned operations and procedures to be used; (2) The estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and (3) Instructions on the measures to be taken to keep the dose ALARA considering other risks that may be present.

10 CFR 835: 204 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Records of the conduct of a planned special exposure shall be maintained and a written report submitted within 30 days after the planned special exposure to the approving organizations identified in § 835.204(a)(3).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will maintain records of the conduct of a planned special exposure and will submit a written report within 30 days after the planned special exposure to the approving organizations identified in 10 CFR 835.204(a)(3).

10 CFR 835: 204 (f) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The dose from planned special exposures is not to be considered in controlling future occupational dose of the individual under 10 CFR 835.202(a), but IS TO BE INCLUDED in records and reports required under this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not use the dose from planned special exposures when controlling future occupational dose of the exposed individual under 10 CFR 835.202(a), but the planned special exposure dose will be included in records and reports required under 10 CFR 835.

10 CFR 835: 205 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin ARE TO BE assessed as specified in this section.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC assesses non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin as specified in 10 CFR 835.205.

10 CFR 835: 205 (b) (1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For purposes of demonstrating compliance with 10 CFR 835.202 (a)(4), assessments SHALL be conducted as follows:

(1) Area of skin irradiated is 100 cm^2 or more. The non-uniform equivalent dose received during the year shall be averaged over the 100 cm^2 of the skin receiving the maximum dose, added to any

uniform equivalent dose also received by the skin, and recorded as the equivalent dose to any extremity or skin for the year.

(2) Area of skin irradiated is 10 cm^2 or more, but is less than 100 cm^2. The non-uniform equivalent dose (H) to the irradiated area received during the year shall be added to any uniform equivalent dose also received by the skin and recorded as the equivalent dose to any extremity or skin for the year. H is the equivalent dose averaged over the 1 cm^2 of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm^2 divided by 100 cm^2 (i.e., H = fD). In no case shall a value of f less than 0.1 be used.

(3) Area of skin irradiated is less than 10 cm^2. The non-uniform equivalent dose shall be averaged over the 1 cm^2 of skin receiving the maximum dose. This equivalent dose shall:

(i) Be recorded in the individual's occupational exposure history as a special entry; and

(ii) Not be added to any other equivalent dose to any extremity or skin for the year.

DESCRIPTION OF COMPLIANCE STATUS:

For purposes of demonstrating compliance with 10 CFR 835.202 (a)(4), the RAC assessments are conducted as follows:

(1) Area of skin irradiated is 100 cm^2 or more. The non-uniform equivalent dose received during the year shall be averaged over the 100 cm^2 of the skin receiving the maximum dose, added to any uniform equivalent dose also received by the skin, and recorded as the equivalent dose to any extremity or skin for the year.

(2) Area of skin irradiated is 10 cm^2 or more, but is less than 100 cm^2. The non-uniform equivalent dose (H) to the irradiated area received during the year shall be added to any uniform equivalent dose also received by the skin and recorded as the equivalent dose to any extremity or skin for the year. H is the equivalent dose averaged over the 1 cm^2 of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm^2 divided by 100 cm^2 (i.e., H = fD). In no case shall a value of f less than 0.1 be used.

(3) Area of skin irradiated is less than 10 cm^2. The non-uniform equivalent dose shall be averaged over the 1 cm^2 of skin receiving the maximum dose. This equivalent dose shall:

(i) Be recorded in the individual's occupational exposure history as a special entry; and

(ii) Not be added to any other equivalent dose to any extremity or skin for the year.

10 CFR 835: 206 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The equivalent dose limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 Sv).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC equivalent dose limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 Sv)..

10 CFR 835: 206 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Substantial variation above a uniform exposure rate that would satisfy the limits provided in 10 CFR 835.206(a) SHALL be avoided.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will avoid substantial variations to the exposure rate to satisfy the limits provided in 10 CFR 835.206(a).

10 CFR 835: 206 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

If the equivalent dose to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 Sv) by the time a worker declares her pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period.

DESCRIPTION OF COMPLIANCE STATUS:

If the equivalent dose to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 Sv) by the time a worker declares her pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period.

10 CFR 835: 207 STATUS: Full Compliance

REQUIREMENT STATEMENT:

The dose limits for minors occupationally exposed to radiation and/or radioactive materials at a DOE activity are 0.1 rem (0.001 Sv) total effective dose in a year and 10 percent of the occupational dose limits specified at § 835.202(a)(3) and (a)(4).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not occupationally expose any minor to radiation and/or radioactive material at a RAC operated site or facility such that the minor exceeds 0.1 rem (0.001 Sv) total effective dose in a year and 10 percent of the occupational dose limits specified at § 835.202(a)(3) and (a)(4).

10 CFR 835: 208 STATUS: Full Compliance

REQUIREMENT STATEMENT:

The total effective dose limit for members of the public exposed to radiation and/or radioactive material during access to a controlled area is 0.1 rem (0.001 Sv) in a year.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not expose any member of the public to radiation and/or radioactive material during access to a controlled area at a RAC operated site or facility such that the total effective dose equivalent exceeds 0.1 rem (0.001 Sv) in a year.

10 CFR 835: 209 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The derived air concentration (DAC) values given in appendices A and C of this part SHALL be used in the control of occupational exposures to airborne radioactive material.

DESCRIPTION OF COMPLIANCE STATUS:

The DAC values given in Appendices A and C of 10 CFR 835 are used in the control of occupational exposures to airborne radioactive material.

10 CFR 835: 209 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The estimation of internal dose SHALL be based on bioassay data rather than air concentration values unless bioassay data are:

(1) Unavailable;
(2) Inadequate; or
(3) Internal dose estimates based on air concentration values are demonstrated to be as or more accurate.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC bases its estimation of internal dose on bioassay data, rather than air concentration values, unless bioassay data are unavailable or inadequate or internal dose estimates based on air concentration values are demonstrated to be as or more accurate.

10 CFR 835: 401 (a) (1) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and areas SHALL be performed to:
Demonstrate compliance with the regulations in this part;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC monitors individuals and areas to demonstrate compliance with the regulations in 10 CFR 835.

10 CFR 835: 401 (a) (2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and areas SHALL be performed to:
Document radiological conditions;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC monitors individuals and areas to document radiological conditions.

10 CFR 835: 401 (a) (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and areas SHALL be performed to:
Detect changes in radiological conditions;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC monitors individuals and areas to detect changes in radiological conditions.

10 CFR 835: 401 (a) (4) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and area SHALL be performed to:
Detect the gradual buildup of radioactive material;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC monitors individuals and areas to detect the gradual buildup of radioactive material.

10 CFR 835: 401 (a) (5) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and areas SHALL be performed to:
Verify the effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure; and

DESCRIPTION OF COMPLIANCE STATUS:

The RAC monitors individuals and areas to verify the effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure.

10 CFR 835: 401 (a)(6) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of individuals and areas SHALL be performed to:
Identify and control potential sources of individual exposure to radiation and/or radioactive material.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC performs monitoring of individuals and areas, as necessary, to identify and control potential sources of individual exposure to radiation and/or radioactive material.

10 CFR 835: 401 (b)(1) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Instruments and equipment used for monitoring SHALL be:
Periodically maintained and calibrated on an established frequency;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains and calibrates instruments and equipment used for monitoring on an established frequency.

10 CFR 835: 401 (b) (2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Instruments and equipment used for monitoring SHALL be:
Appropriate for the type(s), levels, and energies of the radiation(s) encountered.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses instruments and equipment for monitoring that are appropriate for the types, levels, and energies of the radiation encountered.

10 CFR 835: 401 (b) (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Instruments and equipment used for monitoring SHALL be:
Appropriate for existing environmental conditions; and

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses instruments and equipment for monitoring that are appropriate for existing environmental conditions.

10 CFR 835: 401 (b) (4) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Instruments and equipment used for monitoring SHALL be:
Routinely tested for operability.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses instruments and equipment for monitoring that are routinely tested for operability.

10 CFR 835: 402 (a) (1) – (5) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall be provided to and used by:
(1) Radiological workers who, under typical conditions, are likely to receive one or more of the following:
(i) An effective dose of 0.1 rem (0.001 Sv) or more in a year;
(ii) An equivalent dose to the skin or to any extremity of 5 rems (0.05 Sv) or more in a year;
(iii) An equivalent dose to the lens of the eye of 1.5 rems (0.015 Sv) or more in a year;
(2) Declared pregnant workers who are likely to receive from external sources an equivalent dose to the embryo/fetus in excess of 10 percent of the applicable limit at § 835.206(a);
(3) Occupationally exposed minors likely to receive a dose in excess of 50 percent of the applicable limits at § 835.207 in a year from external sources;
(4) Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit at § 835.208 in a year from external sources; and
(5) Individuals entering a high or very high radiation area.

DESCRIPTION OF COMPLIANCE STATUS:

For the purpose of monitoring individual exposures to external radiation, the RAC provides and requires the use of personnel dosimeters by:
(1) Radiological workers who, under typical conditions, are likely to receive one or more of the following:
(i) An effective dose of 0.1 rem (0.001 Sv) or more in a year;
(ii) An equivalent dose to the skin or to any extremity of 5 rems (0.05 Sv) or more in a year;
(iii) An equivalent dose to the lens of the eye of 1.5 rems (0.015 Sv) or more in a year;
(2) Declared pregnant workers who are likely to receive from external sources an equivalent dose to the embryo/fetus in excess of 10 percent of the applicable limit at § 835.206(a);
(3) Occupationally exposed minors likely to receive a dose in excess of 50 percent of the applicable limits at § 835.207 in a year from external sources;
(4) Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit at § 835.208 in a year from external sources; and
(5) Individuals entering a high or very high radiation area.

10 CFR 835: 402 (b)(1) STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

External dose monitoring programs implemented to demonstrate compliance with 10 CFR 835.402(a) SHALL be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:
Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Personnel Dosimetry; or

DESCRIPTION OF COMPLIANCE STATUS:

The RAC personnel external dosimetry program is adequate to demonstrate compliance with 10 CFR 835.402 (a) and the program conforms to the requirements of the DOE Laboratory Accreditation Program for Personnel Dosimetry.

The RAC has provided plans, schedules, and milestones in sections 1 – 13 of this Plan for achieving full compliance with 10CFR835 including DOE Laboratory Accreditation for its personnel dosimetry.

10 CFR 835: 402 (b)(2) STATUS: Not Applicable

REQUIREMENT STATEMENT:

External dose monitoring programs implemented to demonstrate compliance with 10 CFR 835.402(a) SHALL be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:
Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Personnel Dosimetry.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not seek this determination.

10 CFR 835: 402 (c) (1) – (4) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall be conducted for:
(1) Radiological workers who, under typical conditions, are likely to receive a committed effective dose of 0.1 rem (0.001 Sv) or more from all occupational radionuclide intakes in a year;
(2) Declared pregnant workers likely to receive an intake or intakes resulting in an equivalent dose to the embryo/fetus in excess of 10 percent of the limit stated at § 835.206(a);
(3) Occupationally exposed minors who are likely to receive a dose in excess of 50 percent of the applicable limit stated at § 835.207 from all radionuclide intakes in a year; or
(4) Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit stated at § 835.208 from all radionuclide intakes in a year.

DESCRIPTION OF COMPLIANCE STATUS:

For the purpose of monitoring individual exposures to internal radiation, the RAC uses an internal dosimetry program (including routine bioassays) for:

(1) Radiological workers who, under typical conditions, are likely to receive a committed effective dose of 0.1 rem (0.001 Sv) or more from all occupational radionuclide intakes in a year;
(2) Declared pregnant workers likely to receive an intake or intakes resulting in an equivalent dose to the embryo/fetus in excess of 10 percent of the limit stated at § 835.206(a);
(3) Occupationally exposed minors who are likely to receive a dose in excess of 50 percent of the applicable limit stated at § 835.207 from all radionuclide intakes in a year; or
(4) Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit stated at § 835.208 from all radionuclide intakes in a year.

10 CFR 835: 402 (d)(1) STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

Internal dose monitoring programs implemented to demonstrate compliance with 10 CFR 835.402(c) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:
Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Radiobioassay; or

DESCRIPTION OF COMPLIANCE STATUS:
The RAC personnel external dosimetry program is adequate to demonstrate compliance with 10 CFR 835.402 (c) and the program conforms to the requirements of the DOE Laboratory Accreditation Program for Radiobioassay.

The RAC has provided plans, schedules, and milestones in sections 1 – 13 of this Plan for achieving full compliance with 10CFR835 including DOE Laboratory Accreditation for it Radiobioassay Program..

10 CFR 835: 402 (d)(2) STATUS: Not Applicable

REQUIREMENT STATEMENT:

Internal dose monitoring programs implemented to demonstrate compliance with 10 CFR 835.402(c) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:
Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Radiobioassay.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not seek this determination.

10 CFR 835: 403 (a) (1) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of airborne radioactivity SHALL be performed:
Where an individual is likely to receive an exposure of 40 or more DAC-hours in a year; or

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will perform monitoring of airborne radioactivity concentrations where an individual is likely to receive an exposure of ≥40 DAC-hours in a year.

10 CFR 835: 403 (a)(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring of airborne radioactivity SHALL be performed:
As necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC performs monitoring of airborne radioactivity as necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed.

10 CFR 835: 403 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Real-time air monitoring SHALL be performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC performs real-time air monitoring, as necessary, to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material.

REQUIREMENT STATEMENT:

If packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, arrangements SHALL be made to either:
(1) Take possession of the package when the carrier offers it for delivery; or
(2) Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification.

DESCRIPTION OF COMPLIANCE STATUS:

When packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, the RAC will either:
(1) Take possession of the package when the carrier offers it for delivery
(2) Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification.

10 CFR 835: 405 (b)(1),(2),&(3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall be monitored if the package:
(1) Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or
(2) Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or
(3) Has evidence of degradation, such as packages that are crushed, wet, or damaged.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will, upon receipt from radioactive material transportation, monitor the external surfaces of packages known to contain radioactive material if the package:
(1) Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or
(2) Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or
(3) Has evidence of degradation, such as packages that are crushed, wet, or damaged.

10 CFR 835: 405 (c)(1),(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The monitoring required by paragraph (b) of this section shall include:
(1) Measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material; and
(2) Measurements of the radiation levels, if the package contains a Type B quantity (as defined at 10 CFR 71.4) of radioactive material.

DESCRIPTION OF COMPLIANCE STATUS:

In reference to the monitoring required by 10 CFR 835.405(b), the RAC will include measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material and will include measurements of the radiation levels, if the package contains a Type B quantity (as defined at 10 CFR 71.4) of radioactive material.

10 CFR 835: 405 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The monitoring required by paragraph (b) of this section SHALL be completed as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will complete the monitoring required by 10 CFR 835.405(b) as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package.

10 CFR 835: 405 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Monitoring pursuant to § 835.405(b) is not required for packages transported on a DOE site which have remained under the continuous observation and control of a DOE employee or DOE contractor employee who is knowledgeable of and implements required exposure control measures.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may choose not perform monitoring pursuant to § 835.405(b) when packages transported on a DOE site have remained under the continuous observation and control of a DOE employee or DOE contractor employee who is knowledgeable of and implements required exposure control measures.

10 CFR 835: 501 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Personnel entry control SHALL be maintained for each radiological area.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains control of personnel entering each radiological area.

10 CFR 835: 501 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The degree of [personnel entry] control SHALL be commensurate with existing and potential radiological hazards within the area.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains the degree of personnel entry control (either administrative or engineered) so that it is commensurate with the existing and potential radiological hazards within the area.

10 CFR 835: 501 (c)(1) - (5) STATUS: Full Compliance

REQUIREMENT STATEMENT:

One or more of the following methods SHALL be used to ensure (personnel entry) control:
(1) Signs and barricades;
(2) Control devices on entrances;
(3) Conspicuous visual and/or audible alarms;
(4) Locked entrance ways; or
(5) Administrative controls.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC entry control program consists of one or more of the following methods:
(1) Signs and barricades
(2) Control devices on entrances
(3) Conspicuous visual and/or audible alarms
(4) Locked entrance ways, or
(5) Administrative controls.

10 CFR 835: 501 (d) .01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Written authorizations SHALL be required to control entry into and perform work within radiological areas.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC requires written authorizations to control entry into and perform work within radiological areas.

10 CFR 835: 501 (d) .02 STATUS: Full Compliance

REQUIREMENT STATEMENT:

These authorizations SHALL specify radiation protection measures commensurate with the existing and potential hazards.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC written authorizations specify radiation protection measures commensurate with the existing and potential hazards.

10 CFR 835: 501 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

No control(s) SHALL be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will not install any controls at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.

10 CFR 835: 502 (a)(1) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following measures SHALL be implemented for each entry into a high radiation area:
The area SHALL be monitored as necessary during access to determine the exposure rates to which the individuals are exposed; and

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will, for each entry into a high radiation area, monitor the area as necessary during access to determine the exposure rates to which the individuals are exposed.

10 CFR 835: 502 (a)(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following measures SHALL be implemented for each entry into a high radiation area:
Each individual SHALL be monitored by a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated equivalent dose during the entry.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will, for each entry into a high radiation area, monitor each individual using a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated equivalent dose during the entry.

10 CFR 835: 502 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Physical controls. One or more of the following features SHALL be used for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed an equivalent dose to the whole body of 1 rem (0.01 Sv) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates:

(1) A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a high radiation area;
(2) A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area;
(3) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry;
(4) Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained;
(5) Continuous direct or electronic surveillance that is capable of preventing unauthorized entry;
(6) A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.

DESCRIPTION OF COMPLIANCE STATUS:

Physical controls. The RAC uses one or more of the following features at each entrance or access point to a high radiation area:

(1) A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a high radiation area.
(2) A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area.
(3) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry.
(4) During periods when access to the area is required, positive control over each entry is maintained (i.e., entryways that are locked).
(5) Continuous direct or electronic surveillance that is capable of preventing unauthorized entry;

(6) A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.

10 CFR 835: 502 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Very high radiation areas. In addition to the above requirements [10 CFR 835.502(b)], additional measures SHALL be implemented to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas.

DESCRIPTION OF COMPLIANCE STATUS:

In addition to the above requirements (10 CFR 835.502(b)), the RAC will implement additional measures to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas.

10 CFR 835: 502 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

No control(s) SHALL be established in a high or very high radiation area that would prevent rapid evacuation of personnel.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will implement no controls in a high or very high radiation area that would prevent rapid evacuation of personnel.

10 CFR 835: 601 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except as otherwise provided in this subpart, postings and labels required by this subpart SHALL include the standard radiation warning trefoil in black or magenta imposed upon a yellow background.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC uses signs and labels with a yellow background. The radiation symbol is either black or magenta.

10 CFR 835: 601 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Signs required by this subpart SHALL be clearly and conspicuously posted and may include radiological protection instructions.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC posts signs that are clear and conspicuous and may include radiological protection instructions.

10 CFR 835: 601 (c).01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

The posting and labeling requirements in this subpart may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may modify the posting and labeling requirements to reflect the special considerations of DOE activities conducted at private residences or businesses.

10 CFR 835: 601 (c) .02 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Such modifications [to posting requirements] SHALL provide the same level of protection to individuals as the existing provisions in this subpart.

DESCRIPTION OF COMPLIANCE STATUS:

If the RAC makes modifications to posting requirements, the modifications will provide the same level of protection to individuals as the provisions in 10 CFR 835.601.

10 CFR 835: 602 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each access point to a controlled area (as defined in 10 CFR 835.2) SHALL be posted whenever radiological areas or radioactive material areas exist in the area. Individuals who enter only controlled areas without entering radiological areas or radioactive materials areas are not expected to receive a total effective dose of more than 0.1 rem (0.001 Sv) in a year.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC posts each access point to a controlled area (as defined in 10 CFR 835.2), identifying it as a controlled area, whenever radiological areas or radioactive material areas exist in the area. Individuals who enter only controlled areas without entering radiological areas or radioactive materials areas are not expected to receive a total effective dose equivalent of more than 0.1rem (0.001 Sv) in a year.

10 CFR 835: 602 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Signs used for this purpose may be selected by the contractor to avoid conflict with local security requirements.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may select signs to avoid conflict with local security requirements.

10 CFR 835: 603 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each access point to radiological areas and radioactive material areas (as defined in 10 CFR 835.2) SHALL be posted with conspicuous signs bearing the wording provided in this section.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC posts conspicuous signs at each access point to radiological areas and radioactive material areas (as defined in 10 CFR 835.2), bearing the wording provided in 10 CFR 835.603.

10 CFR 835: 603 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radiation Area. The words “Caution, Radiation Area” SHALL be posted at each radiation area.

DESCRIPTION OF COMPLIANCE STATUS:

Radiation Area. The words “Caution, Radiation Area” will be posted at each radiation area.

10 CFR 835: 603 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

High Radiation Area. The words "Caution, High Radiation Area" or "Danger, High Radiation Area" SHALL be posted at each high radiation area.

DESCRIPTION OF COMPLIANCE STATUS:

High Radiation Area. The words "Caution, High Radiation Area" or "Danger, High Radiation Area" will be posted at each high radiation area.

10 CFR 835: 603 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Very High Radiation Area. The words "Grave Danger, Very High Radiation Area" SHALL be posted at each very high radiation area.

DESCRIPTION OF COMPLIANCE STATUS:

Very High Radiation Area. The words "Grave Danger, Very High Radiation Area" will be posted at each very high radiation area.

10 CFR 835: 603 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Airborne Radioactivity Area. The words "Caution, Airborne Radioactivity Area" or "Danger, Airborne Radioactivity Area" SHALL be posted at each airborne radioactivity area.

DESCRIPTION OF COMPLIANCE STATUS:

Airborne Radioactivity Area. The words "Caution, Airborne Radioactivity Area" or "Danger, Airborne Radioactivity Area" will be posted at each airborne radioactivity area.

10 CFR 835: 603 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Contamination Area. The words "Caution, Contamination Area" SHALL be posted at each contamination area.

DESCRIPTION OF COMPLIANCE STATUS:

Contamination Area. The words "Caution, Contamination Area" will be posted at each contamination area.

10 CFR 835: 603 (f) STATUS: Full Compliance

REQUIREMENT STATEMENT:

High Contamination Area. The words "Caution, High Contamination Area" or "Danger, High Contamination Area" SHALL be posted at each high contamination area.

DESCRIPTION OF COMPLIANCE STATUS:

High Contamination Area. The words "Caution, High Contamination Area" or "Danger, High Contamination Area" will be posted at each high contamination area.

10 CFR 835: 603 (g) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radioactive Material Area. The words "Caution, Radioactive Material(s) SHALL be posted at each radioactive material area.

DESCRIPTION OF COMPLIANCE STATUS:

Radioactive Material Area. The words "Caution, Radioactive Material(s) will be posted at each radioactive material area.

10 CFR 835: 604 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Areas MAY be excepted from the posting requirements of 10 CFR 835.603 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of , and empowered to implement, required access and exposure control measures.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may except areas from the posting requirements of 10 CFR 835.603 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of , and empowered to implement, required access and exposure control measures.

10 CFR 835: 604 (b)(1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Areas MAY be excepted from the radioactive material area posting requirements of 10 CFR 835.603(g) when:
(1) Posted in accordance with 10 CFR 835.603(a) through (f); or
(2) Each item or container of radioactive material is labeled in accordance with this subpart such that individuals entering the area are made aware of the hazard; or
(3) The radioactive material of concern consists solely of structures or installed components which have been activated (i.e., such as by being exposed to neutron radiation or particles produced in an accelerator).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may except areas from the radioactive material area posting requirements of 10 CFR 835.603(g) when:
(1) Posted in accordance with 10 CFR 835.603(a) through (f), or
(2) Each item or container of radioactive material is labeled in accordance with this subpart such that individuals entering the area are made aware of the hazard, or
(3) The radioactive material of concern consists solely of structures or installed components which have been activated (i.e., such as by being exposed to neutron radiation or particles produced in an accelerator).

10 CFR 835: 604 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with 10 CFR 835.603 until the packages are monitored in accordance with 10 CFR 835.405.

DESCRIPTION OF COMPLIANCE STATUS:

For areas containing only packages received from radioactive material transportation labeled and in non-degraded condition, the RAC need not post these areas in accordance with 10 CFR 835.603 until the packages are monitored in accordance with 10 CFR 835.405.

10 CFR 835: 605 .01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except as provided in 10 CFR 835.606, each item or container of radioactive material SHALL bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "Caution, Radioactive Material" or "Danger, Radioactive Material."

DESCRIPTION OF COMPLIANCE STATUS:

Except as provided in 10 CFR 835.606, each item or container of radioactive material will bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "Caution, Radioactive Material" or "Danger, Radioactive Material."

10 CFR 835: 605 .02 STATUS: Full Compliance

REQUIREMENT STATEMENT:

The label SHALL also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers, to take precautions to avoid or control exposures.

DESCRIPTION OF COMPLIANCE STATUS:

The label (described in 10 CFR 835.605(1)) will also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers to take precautions to avoid or control exposures.

10 CFR 835: 606 (a)(1) – (6) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Items and containers MAY be excepted from the radioactive material labeling requirements of 10 CFR 835.605 when:
(1) Used, handled, or stored in areas posted and controlled in accordance with this subpart and sufficient information is provided to permit individuals to take precautions to avoid or control exposures; or
(2) The quantity of radioactive material is less than one tenth of the values specified in appendix E of this part; or
(3) Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or
(4) Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or
(5) Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks.
(6) The radioactive material consists solely of nuclear weapons or their components.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may except items and containers from the radioactive material labeling requirements of 10 CFR 835.605 when:
(1) Used, handled, or stored in areas posted and controlled in accordance with this subpart and sufficient information is provided to permit individuals to take precautions to avoid or control exposures, or
(2) The quantity of radioactive material is less than one tenth of the values specified in appendix E of this part, or
(3) Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation, or
(4) Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity, or
(5) Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks.
(6) The radioactive material consists solely of nuclear weapons or their components.

10 CFR 835: 606 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radioactive material labels applied to sealed radioactive sources MAY be excepted from the color specifications of 10 CFR 835.601(a).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may except the radioactive material labels applied to sealed radioactive sources, from the color specifications of 10 CFR 835.601(a).

10 CFR 835: 701 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Records SHALL be maintained to document compliance with this part and with radiation protection programs required by 10 CFR 835.101.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains records to document compliance with 10 CFR 835.701(a) and with radiation protection programs required by 10 CFR 835.101.

10 CFR 835: 701 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Unless otherwise specified in this subpart, records SHALL be retained until final disposition is authorized by DOE.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains required records until final disposition is authorized by DOE.

10 CFR 835: 702 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except as authorized by § 835.702(b), records shall be maintained to document doses received by all individuals for whom monitoring was conducted and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of § 835.402, and authorized emergency exposures.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will maintain records, except as authorized by § 835.702(b), to document doses received by all individuals for whom monitoring was conducted and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of § 835.402, and authorized emergency exposures.

10 CFR 835: 702 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Recording of the non-uniform equivalent dose to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at § 835.202(a)(4). Recording of internal dose (committed effective dose or committed equivalent dose) is not required for any monitoring result estimated to correspond to an individual receiving less than 0.01 rem (0.1 mSv) committed effective dose. The bioassay or air monitoring result used to make the estimate shall be maintained in accordance with § 835.703(b) and the unrecorded internal dose estimated for any individual in a year shall not exceed the applicable monitoring threshold at § 835.402(c).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may choose to not record the non-uniform equivalent dose to the skin if the dose is less than 2 percent of the limit specified for the skin at § 835.202(a)(4).

The RAC may choose not to record internal dose (committed effective dose or committed equivalent dose) for any monitoring result estimated to correspond to an individual receiving less than 0.01 rem (0.1 mSv) committed effective dose. The RAC will maintain the bioassay or air monitoring result used to make the estimate in accordance with § 835.703(b) and the unrecorded internal dose estimated for any individual in a year shall not exceed the applicable monitoring threshold at § 835.402(c).

10 CFR 835: 702 (c) (1) – (6) STATUS: Full Compliance

REQUIREMENT STATEMENT:

(c) The records required by this section shall:
(1) Be sufficient to evaluate compliance with subpart C of this part;
(2) Be sufficient to provide dose information necessary to complete reports required by subpart I of this part;
(3) Include the results of monitoring used to assess the following quantities for external dose received during the year:
(i) The effective dose from external sources of radiation (equivalent dose to the whole body may be used as effective dose for external exposure);
(ii) The equivalent dose to the lens of the eye;
(iii) The equivalent dose to the skin; and
(iv) The equivalent dose to the extremities.
(4) Include the following information for internal dose resulting from intakes received during the year:
(i) Committed effective dose;
(ii) Committed equivalent dose to any organ or tissue of concern; and
(iii) Identity of radionuclides.
(5) Include the following quantities for the summation of the external and internal dose:
(i) Total effective dose in a year;
(ii) For any organ or tissue assigned an internal dose during the year, the sum of the equivalent dose to the whole body from external exposures and the committed equivalent dose to that organ or tissue; and
(iii) Cumulative total effective dose.

(6) Include the equivalent dose to the embryo/fetus of a declared pregnant worker.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC individual monitoring records are:
(1) Sufficient to evaluate compliance with subpart C of 10 CFR 835;
(2) Sufficient to provide dose information necessary to complete reports required by subpart I of 10 CFR 835;
(3) Maintained to include the results of monitoring used to assess the following quantities for external dose received during the year:
(i) The effective dose from external sources of radiation (equivalent dose to the whole body may be used as effective dose for external exposure);
(ii) The equivalent dose to the lens of the eye;
(iii) The equivalent dose to the skin; and
(iv) The equivalent dose to the extremities.
(4) Maintained to include the following information for internal dose resulting from intakes received during the year:
(i) Committed effective dose;
(ii) Committed equivalent dose to any organ or tissue of concern; and
(iii) Identity of radionuclides.
(5) Maintained to include the following quantities for the summation of the external and internal dose:
(i) Total effective dose in a year;
(ii) For any organ or tissue assigned an internal dose during the year, the sum of the equivalent dose to the whole body from external exposures and the committed equivalent dose to that organ or tissue; and
(iii) Cumulative total effective dose.
(6) Maintained to include the equivalent dose to the embryo/fetus of a declared pregnant worker.

10 CFR 835: 702 (d) .01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with § 835.204 and emergency exposures authorized in accordance with § 835.1302(d), shall be obtained to demonstrate compliance with § 835.202(a). If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance.

DESCRIPTION OF COMPLIANCE STATUS:

To demonstrate compliance with 10 CFR 835.202(a), the RAC obtains all occupational exposures received during the current year, except for doses resulting from planned special exposures conducted in compliance with 10 CFR 835.204 and emergency exposures authorized in accordance with 10 CFR 835.1302(d). If the RAC cannot obtain complete records, then the RAC may accept and use a written estimate, signed by the individual, to demonstrate compliance.

10 CFR 835: 702 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For radiological workers whose occupational dose is monitored in accordance with § 835.402, reasonable efforts shall be made to obtain complete records of prior years occupational internal and external doses.

DESCRIPTION OF COMPLIANCE STATUS:

For radiological workers whose occupational dose is monitored in accordance with 10 CFR 835.402, the RAC will make reasonable efforts to obtain complete records of prior years occupational internal and external doses.

10 CFR 835: 702 (f) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The records specified in this section that are identified with a specific individual SHALL be readily available to that individual.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC makes the records specified in 10 CFR 835.702(f) that are identified with a specific individual readily available to that individual.

10 CFR 835: 702 (g) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Data necessary to allow future verification or reassessment of the recorded doses SHALL be recorded.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC records data necessary to allow future verification or reassessment of the recorded doses.

10 CFR 835: 702 (h) STATUS: Full Compliance

REQUIREMENT STATEMENT:

All records required by this section SHALL be transferred to the DOE upon cessation of activities at the site that could cause exposure to individuals.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will transfer all records required by 10 CFR 835.702(h) to the DOE upon cessation of activities at sites that could cause exposure to individuals.

10 CFR 835: 703 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following information SHALL be documented and maintained:
Results of monitoring for radiation and radioactive material as required by subparts E and L of this part, except for monitoring required by 10 CFR 835.1102(d);

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents and maintains the results of monitoring for radiation and radioactive material as required by subparts E and L of 10 CFR 835, except for monitoring required by 10 CFR 835.1102(d).

10 CFR 835: 703 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following information SHALL be documented and maintained:
Results of monitoring used to determine individual occupational dose from external and internal sources;

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents and maintains the results of monitoring used to determine individual occupational dose from external and internal sources.

10 CFR 835: 703 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following information SHALL be documented and maintained:
Results of monitoring for the release and control of material and equipment as required by 10 CFR 835.1101; and

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents and maintains the results of monitoring for the release and control of material and equipment as required by 10 CFR 835.1101.

10 CFR 835: 703 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The following information SHALL be documented and maintained:
Results of maintenance and calibration performed on instruments and equipment as required by 10 CFR 835.401(b);

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents and maintains the results of maintenance and calibration performed on instruments and equipment as required by 10 CFR 835.401(b).

10 CFR 835: 704 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Training records SHALL be maintained, as necessary, to demonstrate compliance with 10 CFR 835.901.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains training records which demonstrate compliance with Sections 10 CFR 835.901.

10 CFR 835: 704 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by 10 CFR 835.101, as well as facility design and control actions required by 10 CFR 835.1001, 835.1002, and 835.1003, SHALL be documented.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by 10 CFR 835.101, as well as facility design and control actions required by 10 CFR 835.1001, 835.1002, and 835.1003.

10 CFR 835: 704 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Records SHALL be maintained to document the results of internal audits and other reviews of program content and implementation.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents and maintains records of the results of internal audits and other reviews of program content and implementation.

10 CFR 835: 704 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy SHALL be maintained.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy.

10 CFR 835: 704 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Changes in equipment, techniques, and procedures used for monitoring SHALL be documented.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC documents changes in equipment, techniques, and procedures used for monitoring.

10 CFR 835: 704 (f) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Records SHALL be maintained as necessary to demonstrate compliance with the requirements of 10 CFR 835.1201 and 835.1202 for sealed radioactive source control, inventory, and source leak tests.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains records as necessary to demonstrate compliance with the requirements of 10 CFR 835.1201 and 835.1202 for sealed radioactive source control, inventory, and source leak tests.

10 CFR 835: 801 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radiation exposure data for individuals monitored in accordance with § 835.402 shall be reported as specified in this section. The information shall include the data required under § 835.702(c). Each notification and report shall be in writing and include: the DOE site or facility name, the name of the individual, and the individual's social security number, employee number, or other unique identification number.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC reports radiation exposure data for individuals monitored in accordance with § 835.402 as specified in this § 835.801. The RAC includes information and data required under § 835.702(c). The RAC provides each notification and report in writing and includes: the DOE site or facility name, the name of the individual, and the individual's social security number, employee number, or other unique identification number.

10 CFR 835: 801 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Upon the request from an individual terminating employment, records of exposure shall be provided to that individual as soon as the data are available, but not later than 90 days after termination. A written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested.

DESCRIPTION OF COMPLIANCE STATUS:
Upon the request from an individual terminating employment, the RAC provides records of exposure to that individual as soon as the data are available, but not later than 90 days after termination. The RAC provides a written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested by the terminating individual to do so.

10 CFR 835: 801 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each DOE- or DOE-contractor-operated site or facility SHALL, on an annual basis, provide a radiation dose report to each individual monitored during the year at that site or facility in accordance with 10 CFR 835.402.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will provide, on an annual basis, a radiation dose report to each individual monitored during the year at the site or facility in accordance with 10 CFR 835.402.

10 CFR 835: 801 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Detailed information concerning any individual's exposure SHALL be made available to the individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a).

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will make available detailed information concerning any individual's exposure to that individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a).

10 CFR 835: 801 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

When a DOE contractor is required to report to the Department, pursuant to Departmental requirements for occurrence reporting and processing, any exposure of an individual to radiation and/or radioactive material, or planned special exposure in accordance with § 835.204(e), the contractor shall also provide that individual with a report on his or her exposure data included therein. Such report shall be transmitted at a time not later than the transmittal to the Department.

DESCRIPTION OF COMPLIANCE STATUS:

When the RAC is required to report to the Department, pursuant to Departmental requirements for occurrence reporting and processing, any exposure of an individual to radiation and/or radioactive material, or planned special exposure in accordance with § 835.204(e), the RAC will also provide that individual with a report on his or her exposure data included therein. The RAC will transmit this report at a time not later than the transmittal to the Department.

10 CFR 835: 901 (a) (1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each individual shall complete radiation safety training on the topics established at § 835.901(c) commensurate with the hazards in the area and the required controls:
(1) Before being permitted unescorted access to controlled areas; and
(2) Before receiving occupational dose during access to controlled areas at a DOE site or facility.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC ensures radiation safety training on the topics established at 10 CFR 835.901(c) commensurate with the hazards in the area and the required controls is provided
(1) Before being permitted unescorted access to controlled areas; and
(2) Before receiving occupational dose during access to controlled areas at a RAC operated site or facility.

10 CFR 835: 901 (b)(1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each individual shall demonstrate knowledge of the radiation safety training topics established in § 835.901(c), commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations:
(1) Before being permitted unescorted access to radiological areas; and
(2) Before performing unescorted assignments as a radiological worker.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC requires each individual to demonstrate knowledge of the radiation safety training topics established in 10 CFR 835.901(c), commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations
(1) Before being permitted unescorted access to radiological areas; and
(2) Before performing unescorted assignments as a radiological worker.

10 CFR 835: 901 (c)(1)-(6) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:
(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;
(2) Basic radiological fundamentals and radiation protection concepts;
(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;
(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;
(5) Individual responsibilities for implementing ALARA measures required by § 835.101; and

(6) Individual exposure reports that may be requested in accordance with § 835.801.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC ensures radiation safety training includes the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:
(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;
(2) Basic radiological fundamentals and radiation protection concepts;
(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;
(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;
(5) Individual responsibilities for implementing ALARA measures required by § 835.101; and
(6) Individual exposure reports that may be requested in accordance with § 835.801.

10 CFR 835: 901 (d)(1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

When an escort is used in lieu of training in accordance with paragraph (a) or (b) of this section, the escort shall:
(1) Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and
(2) Ensure that all escorted individuals comply with the documented radiation protection program.

DESCRIPTION OF COMPLIANCE STATUS:

When the RAC uses an escort used in lieu of training in accordance with 10 CFR 835. 901(a) and 835.901(b), the escort will have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work. The RAC ensures that all escorted individuals comply with this RPP.

10 CFR 835: 901 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Radiation safety training shall be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months. Such training provided for individuals subject to the requirements of § 835.901(b)(1) and (b)(2) shall include successful completion of an examination.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will ensure radiation safety training is provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months. The RAC ensures training for individuals subject to the requirements of § 835.901(b)(1) and (b)(2) and this training requires the successful completion of an examination.

10 CFR 835: 1001 (a) .01 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Measures shall be taken to maintain radiation exposure in controlled areas ALARA through engineered and administrative controls. The primary methods used shall be engineered controls (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls shall be employed only as supplemental methods to control radiation exposure.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will apply measures to maintain radiation exposure in controlled areas ALARA through engineered and administrative controls. The primary methods used by the RAC are engineered controls (e.g., confinement, ventilation, remote handling, and shielding). The RAC uses administrative controls only as supplemental methods to control radiation exposure.

10 CFR 835: 1001 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

For specific activities where use of engineered controls is demonstrated to be impractical, administrative controls shall be used to maintain radiation exposures ALARA.

DESCRIPTION OF COMPLIANCE STATUS:

For specific activities where use of physical design features is demonstrated to be impractical, administrative controls will be used to maintain radiation exposures ALARA.

10 CFR 835: 1002 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:

(a) Optimization methods shall be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.

DESCRIPTION OF COMPLIANCE STATUS:

During the design of new facilities or modification of existing facilities, the RAC will use optimization methods to assure that occupational exposure is maintained ALARA when developing or justifying facility design and physical controls.

10 CFR 835: 1002 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:

(b) The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall be to maintain exposure levels below an average of 0.5 millirem (5 μSv) per hour and as far below this average as is reasonably achievable. The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall be ALARA and shall not exceed 20 percent of the applicable standards in § 835.202.

DESCRIPTION OF COMPLIANCE STATUS:

During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:
The design objective, used by the RAC, for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) is to maintain exposure levels below an average of 0.5 millirem (5 μSv) per hour and as far below this average as is reasonably achievable. The design objectives, used by the RAC, for exposure rates for potential exposure to a radiological worker where occupancy differs from the 2000 hours per year is ALARA and to not exceed 20 percent of the applicable standards in § 835.202.

10 CFR 835: 1002 (c) STATUS: Conditional Compliance

REQUIREMENT STATEMENT:

During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:
Regarding the control of airborne radioactive material, the design objective shall be, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall normally be used.

DESCRIPTION OF COMPLIANCE STATUS:

Regarding the control of airborne radioactive material, the design objective used by the RAC is, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA. In addition to confinement and ventilation, which is used where practical and appropriate, the RAC uses dust suppression and material handling techniques designed to maintain airborne radioactive material to levels that are ALARA.

10 CFR 835: 1002 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:
The design or modification of a facility and the selection of materials SHALL include features that facilitate operations, maintenance, decontamination, and decommissioning.

DESCRIPTION OF COMPLIANCE STATUS:

During the design of new facilities or modification of existing facilities, the RAC will select materials which include features that facilitate operations, maintenance, decontamination, and decommissioning.

10 CFR 835: 1003 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

During routine operations, the combination of physical design features and administrative controls shall provide that:
The anticipated occupational dose to general employees SHALL not exceed the limits established at 10 CFR 835.202; and

DESCRIPTION OF COMPLIANCE STATUS:

During routine operations, the combination of the RAC physical design features and administrative controls will limit the occupational dose to general employees to less than the limits established at 10 CFR 835.202.

10 CFR 835: 1003 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

During routine operations, the combination of physical design features and administrative controls shall provide that:

The ALARA process is utilized for personnel exposures to ionizing radiation.

DESCRIPTION OF COMPLIANCE STATUS:

During routine operations, the combination of the RAC physical design features and administrative controls will provide that the ALARA process is utilized for personnel exposures to ionizing radiation.

10 CFR 835: 1101 (a) (1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except as provided in paragraphs (b) and (c) of this section, material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas shall not be released to a controlled area if:
(1) Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in appendix D of this part; or
(2) Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in appendix D of this part.

DESCRIPTION OF COMPLIANCE STATUS:

Except as provided in paragraphs (b) and (c) of this 10 CFR 835.1101, the RAC will not release material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas to a controlled area if:
(1) Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in appendix D of this part; or
(2) Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in appendix D of this part.

10 CFR 835: 1101 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Material and equipment exceeding the removable surface contamination values specified in appendix D of this part may be conditionally released for movement on-site from one radiological area for immediate placement in another radiological area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may choose to conditionally release material and equipment exceeding the removable surface contamination values specified in 10 CFR 835, Appendix D for movement onsite from one radiological area for immediate placement in another radiological area, if appropriate monitoring is performed and appropriate controls for the movement are established and exercised.

10 CFR 835: 1101 (c) (1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Material and equipment with fixed contamination levels that exceed the total surface contamination values specified in appendix D of this part may be released for use in controlled areas outside of radiological areas only under the following conditions:
(1) Removable surface contamination levels are below the removable surface contamination values specified in appendix D of this part; and
(2) The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contaminated status.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may choose to release and use material and equipment with fixed contamination levels that exceed the total surface contamination values specified in appendix D of 10 CFR 835 in controlled areas outside of radiological areas only under the following conditions:
(1) Removable surface contamination levels are below the removable surface contamination values specified in appendix D of 10 CFR 835; and
(2) The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contaminated status.

Material and equipment with fixed contamination levels that exceed the total surface contamination values specified in 10 CFR 835 Appendix D may be released for use in controlled areas outside of the radiological areas if the removable surface contamination values are below the values specified in Appendix D.

10 CFR 835: 1102 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Appropriate controls shall be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC maintains and verifies appropriate controls which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.

10 CFR 835: 1102 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Any area in which contamination levels exceed the values specified in appendix D of this part shall be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC controls any area in which contamination levels exceed the values specified in Appendix D of 10 CFR 835 in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable contamination levels.

10 CFR 835: 1102 (c)(1)&(2) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values

specified in appendix D of this part, shall be controlled as follows when located outside of radiological areas:

(1) The area shall be routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in appendix D of this part; and
(2) The area shall be conspicuously marked to warn individuals of the contaminated status.

DESCRIPTION OF COMPLIANCE STATUS:

For areas, located outside of radiological areas, which are accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in appendix D of 10 CFR 835, the RAC ensures that:

(1) The area is routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in appendix D of 10 CFR 835; and
(2) The area is conspicuously marked to warn individuals of the contaminated status.

10 CFR 835: 1102 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Individuals exiting contamination, high contamination, or airborne radioactivity areas shall be monitored, as appropriate, for the presence of surface contamination.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will monitor for the presence of surface contamination, as appropriate, individuals exiting contamination, high contamination, or airborne radioactivity areas.

10 CFR 835: 1102 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Protective clothing shall be required for entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in appendix D of this part.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC requires protective clothing for entry into areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in Appendix D of 10 CFR 835.

10 CFR 835: 1201 STATUS: Full Compliance

REQUIREMENT STATEMENT:

Sealed radioactive sources SHALL be used, handled, and stored in a manner commensurate with the hazards associated with the operations involving the sources.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will use, handle and store sealed radioactive sources in a manner commensurate with the hazards associated with the operations involving the sources.

10 CFR 835: 1202 (a)(1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each accountable sealed radioactive source shall be inventoried at intervals not to exceed six months. This inventory shall:
(1) Establish the physical location of each accountable sealed radioactive source;
(2) Verify the presence and adequacy of associated postings and labels; and
(3) Establish the adequacy of storage locations, containers, and devices.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will inventory each accountable sealed radioactive source at intervals not to exceed six months. This inventory will:
(1) Establish the physical location of each accountable sealed radioactive source;
(2) Verify the presence and adequacy of associated postings and labels; and
(3) Establish the adequacy of storage locations, containers, and devices.

10 CFR 835: 1202 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Except for sealed radioactive sources consisting solely of gaseous radioactive material or tritium, each accountable sealed radioactive source shall be subject to a source leak test upon receipt, when damage is suspected, and at intervals not to exceed six months. Source leak tests shall be capable of detecting radioactive material leakage equal to or exceeding 0.005 μCi.

DESCRIPTION OF COMPLIANCE STATUS:

Except for sealed radioactive sources consisting solely of gaseous radioactive material or tritium, the RAC will perform a source leak test on each accountable sealed radioactive source upon receipt, when damage is suspected, and at intervals not to exceed six months. The leak tests performed by the RAC are capable of detecting radioactive material leakage equal to or exceeding 0.005 μCi.

10 CFR 835: 1202 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Notwithstanding the requirements of paragraph (b) of this section, an accountable sealed radioactive source is not subject to periodic source leak testing if that source has been removed from service. Such sources shall be stored in a controlled location, subject to periodic inventory as required by paragraph (a) of this section, and subject to source leak testing prior to being returned to service.

DESCRIPTION OF COMPLIANCE STATUS:

Notwithstanding the requirements of paragraph (b) of this § 835.1202, the RAC does not subject an accountable sealed radioactive source to periodic source leak testing if that source has been removed from service. In this instance, the RAC will ensure that such sources are stored in a controlled location, subject to periodic inventory as required by paragraph (a) of § 835.1202, and subject to source leak testing prior to being returned to service.

10 CFR 835: 1202 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Notwithstanding the requirements of paragraphs (a) and (b) of this section, an accountable sealed radioactive source is not subject to periodic inventory and source leak testing if that source is located in an area that is unsafe for human entry or otherwise inaccessible.

DESCRIPTION OF COMPLIANCE STATUS:

Notwithstanding the requirements of paragraphs (a) and (b) of § 835.1202, the RAC does not subject an accountable sealed radioactive source to periodic inventory and source leak testing if that source is located in an area that is unsafe for human entry or otherwise inaccessible.

10 CFR 835: 1202 (e) STATUS: Full Compliance

REQUIREMENT STATEMENT:

An accountable sealed radioactive source found to be leaking radioactive material shall be controlled in a manner that minimizes the spread of radioactive contamination.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will control an accountable sealed radioactive source found to be leaking radioactive material in a manner that minimizes the spread of radioactive contamination.

10 CFR 835: 1301 (a) (1) – (3) STATUS: Full Compliance

REQUIREMENT STATEMENT:

A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in § 835.202 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met:
(1) Approval is first obtained from the contractor management and the Head of the responsible DOE field organization;
(2) The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and
(3) The affected employee agrees to return to radiological work.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC may choose to allow a general employee, whose occupational dose has exceeded the numerical value of any of the limits specified in § 835.202 as a result of an authorized emergency exposure, to return to work in radiological areas during the current year when all of the following conditions are met:
(1) Approval is first obtained from the contractor management and the Head of the responsible DOE field organization;
(2) The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and
(3) The affected employee agrees to return to radiological work.

10 CFR 835: 1301 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

All doses exceeding the limits specified in § 835.202 shall be recorded in the affected individual's occupational dose record.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC records all doses exceeding the limits specified in 10 CFR 835.202 in the affected individual’s occupational dose record.

10 CFR 835: 1301 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

When the conditions under which a dose was received in excess of the limits specified in § 835.202, except those doses received in accordance with § 835.204, have been eliminated, operating management shall notify the Head of the responsible DOE field organization.

DESCRIPTION OF COMPLIANCE STATUS:

When the conditions under which a dose was received in excess of the limits specified in 10 CFR 835.202, except those doses received in accordance with 10 CFR 835.204, have been eliminated, the RAC management will notify the Head of the responsible DOE field organization.

10 CFR 835: 1301 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Operations which have been suspended as a result of a dose in excess of the limits specified in § 835.202, except those received in accordance with § 835.204, may be resumed only with the approval of DOE.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will have approval from the DOE prior to resuming operations which have been suspended as a result of a dose in excess of the limits specified in § 835.202, except those received in accordance with § 835.204.

10 CFR 835: 1302 (a) STATUS: Full Compliance

REQUIREMENT STATEMENT:

The risk of injury to those individuals involved in rescue and recovery operations SHALL be minimized.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will take steps to minimize the risk of injury to those individuals involved in rescue and recovery operations.

10 CFR 835: 1302 (b) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Operating management SHALL weigh actual and potential risks against the benefits to be gained.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will weigh actual and potential risks against the benefits to be gained.

10 CFR 835: 1302 (c) STATUS: Full Compliance

REQUIREMENT STATEMENT:

No individual SHALL be required to perform rescue action that might involve substantial personal risk.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will only use volunteers to perform rescue actions that might involve substantial personal risk.

10 CFR 835: 1302 (d) STATUS: Full Compliance

REQUIREMENT STATEMENT:

Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at 10 CFR 835.202(a) SHALL be trained in accordance with 10 CFR 835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.

DESCRIPTION OF COMPLIANCE STATUS:

The RAC will train each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at 10 CFR 835.202(a), in accordance with 10 CFR 835.901(b), and will brief them beforehand on the known or anticipated hazards to which they will be exposed.

Note: 10 CFR 835 Section 1303 is a reserved section with no regulatory requirements.

10 CFR 835: 1304 (a) STATUS: Not Applicable

REQUIREMENT STATEMENT:

Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, SHALL provide nuclear accident dosimetry for those individuals.

DESCRIPTION OF COMPLIANCE STATUS:

The Moab Mill Tailings pile does not contain configurable quantities of fissile materials.

10 CFR 835: 1304 (b) (1) – (4) STATUS: Not Applicable

REQUIREMENT STATEMENT:

Nuclear accident dosimetry shall include the following:
(1) A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;
(2) Methods and equipment for analysis of biological materials;
(3) A system of fixed nuclear accident dosimeter units; and
(4) Personal nuclear accident dosimeters.

DESCRIPTION OF COMPLIANCE STATUS:

The Moab Mill Tailings pile does not contain configurable quantities of fissile materials.

APPENDIX B
Technical Position

Radon/Thoron
Title 10, Code of Federal Regulations, Part 852 (Section 10)
Exemption Requests

Technical Position

Radon/Thoron
Title 10, *Code of Federal Regulations*, Part 835 (10 CFR 835)
Exemption Requests

Four contractors have sought relief from various requirements contained in 10 CFR 835, "Occupational Radiation Protection," for monitoring, reporting, posting, and assessing dose from occupational exposure to radon and/or thoron and their progeny. Exemption requests have been received from the Formerly Utilized Sites Remedial Actions Programs (FUSRAP) (contractor: Bechtel National, Inc.), Uranium Mill Tailings Remedial Act (UMTRA) (contractor: M.K. Ferguson), Grand Junction Program Office (GJPO) (contractor: RUST/Geotech, Inc.), and Fernald Environmental Remediation Management Corporation (FERMCO). As discussed below, relief from specific provisions of 10 CFR 835 are justified; other relief is not justified. The Office of Worker Protection Programs and Hazards Management (EH-52) recommends providing exemption to those sections of 10 CFR 835 as specifically discussed in this technical position. These exemptions would no longer be effective when the Department revised regulatory provisions pertaining to the specific provisions for which the exemptions are granted.

Discussion of Exemption Requests

General

1. FUSRAP

   Bechtel National, Inc., contractor for the FUSRAP, has submitted seven requests for exemption from various provisions in 10 CFR 835 which deal directly with inherent problems in conducting dose assessment, performing real-time air monitoring, and posting and personal monitoring for radon, thoron, and their progeny.

2. UMTRA and GJPO

   MK-Ferguson, contractor for the UMTRA project, and RUST/Geotech, contractor for the GJPO have requested temporary exemptions from numerous provisions contained in 10 CFR 835 involving the development of a dose assessment program for radon. These contractors state that they will develop such programs when the Department of Energy (DOE) provides guidance relative to radon dose assessment. UMTRA and GJPO have essentially requested the same temporary exemption. UMTRA has also requested a temporary exemption from the derived air concentration (DAC) value for Radon replacing it with a DAC based on International Commission on Radiological Protection (ICRP) Publication 65. GJPO did not request this exemption.

3. FERMCO

   FERMCO has requested exemptions from several requirements of 10 CFR 835 addressing controls particular to radon, thoron, and their progeny. FERMCO specifically identifies the need for relief from requirements concerning dose assessment, real-time air monitoring, and posting and monitoring requirements.

Applicable Requirements

Table 1, below, provides a summary of the applicable requirements matrixed with the contractor making the specific exemption request. The associated test for these requirements is provided on pages 12 − 17 of this document.

Table 1. Comparison of Applicable Requirements to Specific Exemption Requests

Provision	FUSRAP	UMTRA	GJPO	FERMCO
§835.1(b)(6)[1]				
§835.2(a)[1]				
§835.4		X	X	
§835.202(a)(1)		X	X	
§835.202(a)(2)		X	X	
§835.202(b)		X	X	
§835.202(c)[1]				
§835.203(a)		X	X	
§835.206(a)			X	
§835.206(c)		X	X	
§835.207[1]				
§835.208		X	X	
§835.209(b)		X	X	
§835.209(c)		X	X	
§835.401(a)(1)		X	X	
§835.402(c)(1)	X	X	X	X
§835 402(c)(2)	X	X	X	X
§835 402(c)(3)	X	X		X
§835.402(d)		X	X	X
§835.403(a)(1)				X
§835.403(a)(2)	X			X
§835.403(a)(3)	X			X
§835.404(f)	X			X
§835.603(d)	X			X
§835.701(a)		X	X	
§835.702(a)		X	X	X
§835.702(c)(1)		X	X	
§835.702(c)(2)		X	X	
§835.702(c)(4)(i)		X	X	
§835.702(c)(4)(ii)		X	X	
§835.702(c)(4)(iii)		X	X	
§835.702(c)(5)		X	X	
§835.702(c)(6)		X	X	
§835.702(d)		X	X	
§835.702(f)		X	X	
§835.801(a)		X	X	
§835.801(b)		X	X	
§835.801(c)		X	X	
§835.801(d)		X	X	
Appendix A, Footnote 4		X		
Appendix C[1]				

[1]These provisions were included due to their direct application to the relief granted.

Results of Analysis

Discussion

Radon (Rn-222) and thoron (Rn-220) and their progeny present unique problems associated with occupational radiation protection. The Radiological Control Coordinating Committee (RCCC) Subcommittee on Radon reviewed and documented six issues associated with radon monitoring. These issues are discussed on page 18 of this document. One of these issues is that unlike other occupational exposure received while conducting DOE activities, radon and thoron are present in natural background. The concentrations of radon and thoron occurring in background vary with a variety of environmental factors, the time of day, and the time of year. This creates technical difficulties in differentiating occupational exposure from background exposure at sites where radon and thoron are present due to current or previous DOE activities. Several contractors (FUSRAP, UMTRA, GJPO, and FERMCO) have requested exemptions from various provisions in 10 CFR 835 because of these problems. Difficulties have been noted particularly in the areas of dose assessment, real-time air monitoring, and posting and monitoring requirements.

UMTRA has also questioned the dose conversion basis implicit to Footnote 4 in Appendix A of 10 CFR 835. 10 CFR 835 equates 4 Working Level Months[2] (WLM) radon exposure (12 WLM thoron exposure) to 5 rem committed effective dose equivalent (CEDE). However, ICRP Publication 65 has implied and the International Atomic Energy Agency (IAEA) interim basic safety standards recommend a dose conversion for 4 WLM radon exposure (12 WLM thoron exposure) to 2 rem CEDE.

Based upon EH-52 review and analysis of the exemptions requested and considering the basis for the occupational radiation protection regulatory standards, the fundamental problems in achieving compliance with 10 CFR 835 dealing with occupational exposure to radon and thoron and their progeny fall into the following three categories:

1. There is a technology shortfall in the ability of available instrumentation to reliably differentiate occupational exposures to low levels of radon and thoron from natural background. Therefore, meeting individual monitoring requirements contained in §835.402 are not practical. The Department anticipates releasing a request for public comment on this issue in the near future. Comments regarding the exclusion of radon and thoron and their progeny from 10 CFR 835 will be considered.

2. In the preamble promulgating the final rule, the DOE committed to provide guidance regarding dose assessment for radon and thoron. This guidance has not been provided.

3. The Department did not anticipate the difficulties identified in achieving compliance with 10 CFR 835 under situations involving occupational exposure to radon and thoron and their progeny. Advanced technologies are not under development to alleviate such shortfalls nor is the Department anticipating such development in the foreseeable future.

[2] Working Level Month is defined as the amount of alpha particle energy potentially emitted by any mixture of radon or thoron progeny per unit volume of air, reported in units of working levels, multiplied by the worker's exposure time in months of 170 hours.

The following specific issues were raised in each of the contractor's exemption requests:

FUSRAP

FUSRAP−10CFR835-EX-01: §835.402(c)(1)
FUSRAP−10CFR835-EX-02: §835.402(c)(2)
FUSRAP−10CFR835-EX-03: §835.402(c)(3)

FUSRAP requests an exemption from the requirement of calculating or recording the CEDE or the committed dose equivalent (CDE) to radon and thoron and their short-lived decay products until DOE adopts the recommendations of ICRP Publication 65 and develops guidance for evaluation of occupational exposure to radon.

FUSRAP also requests an exemption from the requirement of using the DAC values published in 10 CFR 835 for Rn-220 and Rn-222, which are based on ICRP Publication 32. FUSRAP requests approval to use the DAC values for Rn-220 and Rn-222 that are based on the recommendations from ICRP Publication 65 rather than 10 CFR 835.

FUSRAP−10CFR835-EX-04: §835.403(a)(2)
FUSRAP−10CFR835-EX-05: §835.403(a)(3)

For those areas where the airborne contaminant is radon or thoron and their progeny, FUSRAP requests an exemption from the requirement of utilizing real-time monitoring for radon, using continuous air monitors. FUSRAP maintains that instruments to accurately assess representative Working Level (WL) exposures in real-time and provide alarm capabilities are not commercially available.

FUSRAP−10CFR835-EX-06: §835.404(f)

FUSRAP requests an exemption from the requirement of whole body contamination monitoring for personnel when they exit airborne radioactivity areas posted only for elevated levels of radon.

FUSRAP−10CFR835-EX-07: §835.603(d)

FUSRAP requests an exemption from posting an airborne radioactivity area based on a single measurement exceeding 10 percent of the DAC (radon only). FUSRAP requests that postings of airborne radioactivity areas be based on long term averages of air concentrations.

UMTRA and GJPO

UMTRA and GJPO (GJPO−10CFR835-EX-02) are requesting a temporary exemption from the requirements contained in numerous sections of the 10 CFR 835 (included in some of the previously discussed exemption requests), which involve the development of a dose assessment program for radon. UMTRA and GJPO stated that they will develop radon dose assessment programs when the DOE provides regulatory guidance on implementing those requirements.

UMTRA also seeks a temporary exemption from the requirement of using the DAC value for Rn-222 contained in Appendix A of 10 CFR 835, which is based on ICRP Publication 32. UMTRA requests permission to use a DAC value, which is based on ICRP Publication 65.

FERMCO

FERMCO−ER-94-04

FERMCO is requesting exemptions from numerous requirements in 10 CFR 835 (included in some of the previously discussed exemption requests) addressing controls specific to short-lived radioactive airborne contaminants (i.e., radon, thoron, and subsequent decay products). These exemptions focus on dose assessment, real-time monitoring, posting, and contamination monitoring. FERMCO also noted that making occupational dose evaluations at levels near background is extremely difficult and in some cases not technically feasible.

Concurrence

Two specific issues relative to these exemption requests concerning occupational exposure to radon and thoron must be resolved in order to ensure that compliance can be achieved with the provisions of 10 CFR 835. First, relief from monitoring requirements must be provided in recognition of a technology shortfall of current instrumentation and monitoring techniques in being able to distinguish background levels of radon or thoron from levels created as a result of DOE activities. Second, guidance on assessing dose from occupational exposure to radon and thoron, and their progeny must be provided.

The first issue involves the difficulty in differentiating between background and occupational exposure to radon and thoron and their progeny. This issue is addressed for radiological workers by including background contributions in occupational exposure to radon or thoron and their progeny and changing appropriate thresholds contained in l0 CFR 835 from 100 mrem to 500 mrem CEDE. To be more precise and considering that exposure to radon and thoron is more typically measured in WLM, the thresholds are raised to 0.4 WLM for radon and 1.2 WLM for thoron. These thresholds include:

- Designating and posting controlled areas (10 CFR 835.2(a) and §835.603);
- classifying individuals as radiological workers (§835.2(a));
- monitoring radiological workers for internal exposure (§835.401(a)(1) and 402(c)); and
- air sampling (§835.403(a)(1)) [requirement stated in percent of annual limit of intake (ALI)].

The 500 mrem threshold includes all contributions from sources of radon or thoron and their progeny including background.

The second issue regarding conversion of exposure to radon or thoron and their progeny to a dosimetric quantity is also addressed. Exposures to radon or thoron and their progeny are typically reported in units of WLM. Consistent with the bases for the DACs presented in Appendix A of 10 CFR 835, continuous occupational exposure at 1 DAC (i.e., 170 hours per month) would result in a committed effective dose equivalent of 5 rem. Such continuous exposure would result in exposures of 4 WLM for the radon scenario and 12 WLM for the thoron scenario. In order to normalize these exposures, the derived conversion to determine committed effective dose equivalent, in rem, from radon or thoron exposure in WLM is 5/4 rem per WLM for radon and 5/12 rem per WLM for thoron. Committed dose equivalent to the lungs

would be determined by dividing the committed effective dose equivalent by the tissue weighting factor for the lungs, which is provided in §835.2(b). Because of the reliance on the term WLM in controlling radon and thoron exposures, records of intakes under §835.702(c)(4)(iii) and §835.703(b) will be recorded in units of WLM rather than units of curies. Conversion of Radon/Thoron Exposure to Dose instruction on pages 19 and 20 of this document provides further guidance on determining dose from exposures to radon and thoron and their progeny.

The following exemptions should be granted for the following reasons:

1. Exclusion of background levels of radon or thoron and their progeny [§§835.1(b)(4), 2(a), and 202(c)]:

   Due to the diurnal, geographic, and seasonal variations in background levels of radon, thoron, and their progeny, differentiating occupational levels from background levels is impractical. Accordingly, for the purpose of determining occupational exposure of individuals from radon or thoron and their progeny, background levels of these radionuclides will not be excluded from individual occupational exposure monitoring results.

   Exposure to background levels of radon or thoron and their progeny in the controlled area will be considered to be part of an individual's occupational exposure under this exemption.

2. Airborne radioactivity area definition [§835.2(a)]:

   The definition for airborne radioactivity area is modified to mean any area where the measured concentration of airborne radioactivity, above natural background for all radionuclides except radon and thoron and their progeny, exceeds or is likely to exceed 10 percent of the DAC values listed in Appendix A or Appendix C of this part.

   This definition was modified as a result of including background radon and thoron exposures with occupational exposures to radon and thoron.

3. Controlled area definition [§835.2(a)]:

   The definition for controlled area is modified to mean any area to which access is managed in order to protect individuals from exposure to radiation and/or radioactive material. Individuals who enter only the controlled area without entering radiological areas are not expected to receive a total effective dose equivalent of more than 100 mrem, (0.001 sievert) in a year from sources other than occupational exposure to radon or thoron and their progeny. Individuals who enter only the controlled area without entering radiological areas are not expected to receive a committed effective dose equivalent of more than 500 mrem (0.005 sievert) in a year from exposure to radon or thoron and their progeny. Posting requirements would conform with these modified conditions. Minors and members of the public are still required to meet the 100 mrem total effective dose equivalent dose limit.

This definition was modified as a result of including background radon and thoron exposures with occupational exposures to radon and thoron. In addition, background for the entire site must be considered when determining occupational exposure to radon and thoron under this exemption. Background levels of radon and thoron at each of the four contractor sites is typically greater than 100 mrem in one year. Therefore, if the definition had not been modified, each site would have been required to be posted as a radiological area (i.e., radiation area or airborne radioactivity area) with appropriate access and administrative controls. The elevated exposure limit for exposure to radon and thoron in the modified definition provides relief to contractors for this requirement.

4. Occupational exposure definition [§835.2(a)]:

The definition for occupational exposure is modified to mean an individual's exposure to ionizing radiation (external and internal) as a result of that individual's work assignment. Occupational exposure does not include planned special exposures, exposures received as a medical patient, background radiation (except for radon and thoron and their progeny), or voluntary participation in medical research programs.

This definition was modified as a result of including background radon and thoron exposures with occupational exposures to radon and thoron.

5. Radiological worker definition [§835.2(a)]:

The definition of a radiological worker is modified to mean a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 100 mrem (0.001 sievert) per year total effective dose equivalent from sources other than radon or thoron and their progeny. For exposures to radon or thoron and their progeny, the routine exposure is likely to exceed 500 mrem (0.005 sievert) per year committed effective dose equivalent.

6. Monitoring of radiological workers to demonstrate compliance with the occupational exposure limits [§835.402(c)(1)]:

Consistent with the discussion regarding technical difficulties associated with differentiating occupational exposure from background levels of radon or thoron and their progeny, the threshold for monitoring radiological workers' exposure to radon or thoron and their progeny is raised to 500 mrem CEDE (0.4 WLM for radon and 1.2 WLM for thoron). This is consistent with monitoring thresholds under U.S. Nuclear Regulatory Commission radiation protection regulations. The monitoring threshold of 5 rem committed dose equivalent has not been modified since the 500 mrem CEDE threshold is more restrictive; the corresponding committed dose equivalent to the lungs would be 4.17 rem. As noted previously, this threshold includes background.

The 500 mrem CEDE monitoring threshold for radiological workers' exposure to radon and thoron is independent of the 100 mrem CEDE threshold for all other radionuclides. Therefore, if the radiological worker is exposed to radon and thoron and other radionuclides during the year, the 500 mrem CEDE monitoring threshold would apply only to radon and thoron and the remaining radionuclides would have a 100 mrem CEDE monitoring threshold.

7. Air sampling requirements [§835.403(a)(1)]:

   Consistent with the monitoring threshold, the air sampling threshold for radon or thoron and their progeny is raised from 2 percent ALI to 10 percent ALI. These levels correlate with 100 mrem and 500 mrem CEDE, respectively. To be consistent with the terminology and quantities used when measuring exposure to radon and thoron, the monitoring threshold is raised to 0.4 WLM for radon and 1.2 WLM for thoron.

   The 500 mrem CEDE air sampling threshold for exposures to radon and thoron is independent of the 100 mrem CEDE threshold for all other radionuclides. Therefore, if a mixture of radon and thoron and other airborne radionuclides existed, the 500 mrem CEDE monitoring threshold would apply only to radon and thoron and the remaining mixture would have a 100 mrem CEDE monitoring threshold.

8. Requirements for individual monitoring records and use of radiological units [§§835.4, and 702(c)(4)(iii)]:

   The exposure to radon or thoron and their progeny present unique challenges towards meeting the requirement to record estimated intake. Since radon and thoron exposure is typically reported in terms of WLMs, the Department recognizes this as an acceptable surrogate for the estimated intake for compliance with §835.702(c)(4)(iii). The requirements of §835.702(c)(4)(i) and (ii) remain unchanged. The selection of an equilibrium factor is left to the contractor, but technical justification must be provided.

   The DOE also recognizes the use of WLMs as an acceptable unit for radon and thoron exposure monitoring. Accordingly, when reporting the internal dose evaluation results from radon or thoron exposures, the estimated intake would be reported in units of WLMs. Any internal doses would be included in the determination of total effective dose equivalent (§835.202(a)(1)) and total organ dose equivalent (§835.202(a)(2)).

9. DAC for Workers from External Exposure During Immersion in a Contaminated Atmospheric Cloud [Appendix C]: The DOE recognizes that immersion DAC, for Rn-220 and Rn-222 were erroneously included in Appendix C of 10 CFR 835. To preclude any confusion, the need to evaluate occupational exposure to radon and thoron based on this appendix is not required.

The above exemptions meet the criteria for granting a permanent exemption under 10 CFR 820.62:

1. Granting these exemptions would be authorized by law.

2. These exemptions would not present an undue risk to public health and safety, the environment, or facility workers.

3. The exemptions would be consistent with the safe operation of a DOE nuclear facility.

4. In granting these exemptions pursuant to §820.62(d)(2), the DOE recognizes that special circumstances exist where the application of the requirements discussed, above, because the application of these requirements in the case of occupational exposure to radon or

thoron and their progeny would not serve the underlying purpose of the stated requirements and such compliance would result in resource impacts, which are not justified by the safety improvements.

The following exemption requests should be denied for the reasons stated:

1. Assessment of dose from exposures to radon and thoron and their progeny [§§835.202(a)(1) and (2), 202(b), 203(a), 209(b) and (c), 402(d) and Appendix A, Footnote 4]:

   Pages 19 and 20 of this technical position provides guidance on assessing dose from occupational exposure to radon and thoron, and their progeny. Therefore, no exemptions to the above provisions of the rule are necessary.

2. Limits for the embryo/fetus [§§835.206(a) and (c) and 402(c)(2)]:

   The limits for determining the dose equivalent to the embryo/fetus from occupational exposure to a declared pregnant worker are irrelevant in the case of exposures to radon and thoron and their progeny. Intakes of these radionuclides result only in dose to the lungs and would not result in any concurrent exposure to the embryo/fetus. Therefore, no exemptions to the dose limit and monitoring threshold provisions of 10 CFR 835 are necessary.

   Likewise, there is no justification for granting an exemption from reassignment of declared pregnant workers per §835.206(c).

3. Exposure limits and individual monitoring for minors and members of the public entering a controlled area [§§835.207, 208, and 402(c)(3)]:

   Exposure limits for minors and members of the public entering a controlled area are not increased for exposure to radon or thoron and their progeny. Monitoring thresholds for minors and members of the public remain at 50 mrem CEDE. This includes all exposures to radon and thoron and their progeny while in the controlled area. To demonstrate compliance with these monitoring provisions requires an assessment of the levels of radon and thoron and their progeny and appropriate controls for limiting the occupancy time for minors and individual members of the public. The occupancy times are typically expected to be quite low, in the order of hours, since any exposure would occur within a properly defined controlled area.

   Notably, contractors may face a situation where radon and thoron levels outside a controlled area could result in a minor or member of the public exceeding the 50 mrem monitoring threshold while on-site, but outside a controlled area. This exemption would not require these individuals to be monitored for exposure to radon or thoron outside the controlled areas.

4. Monitoring to demonstrate compliance with 10 CFR 835 [§835.401(a)(1)]:

   The basis for this exemption request is that it is not technically feasible to demonstrate compliance with the monitoring requirements of 835.402(c)(1) for radon and thoron

exposure. Therefore, an exemption to this requirement is not necessary due to the relief being granted under §835.402(c)(1).

5. Real-time monitoring for radon and thoron [§835.403(a)(2) and (3)]:

   Real-time monitoring using continuous air monitors continue to be required in normally occupied areas where an individual is likely to be exposed to airborne radioactivity concentrations (including radon or thoron and their progeny) exceeding 1 DAC (1/3 WL and 1 WL, respectively). The commercial availability of working level monitors with the requisite sensitivity and alarm capability preclude the need for relief from these requirements.

6. Appropriate monitoring to detect and prevent the spread of contamination from airborne radioactivity areas [§835.404(f)]:

   The provisions in 10 CFR 835 relating to administrative and physical controls to prevent the spread of contamination from airborne radioactivity areas are applicable in the case of occupational exposure to radon and thoron and their progeny. The rule requires appropriate monitoring, entry control commensurate with potential radiological hazards, and development of administrative procedures necessary to demonstrate compliance.

7. Posting of airborne radioactivity areas [§835.603(d)]:

   The posting of airborne radioactivity areas corresponding to 10 percent DAC (1/30 WL for radon and 1/10 WL for thoron) for occupational exposure to radon or thoron remain unchanged.

8. Recordkeeping requirements [§§835.701(a) and 702(a), (c)(1), (c)(2), (c)(4)(i), (c)(4)(ii), (c)(5), (c)(6), (d), and (f)]:

   Other than those provisions for records related to internal dose evaluation and monitoring, recordkeeping requirements are pertinent to documenting compliance with 10 CFR 835 for radiation protection programs where occupational exposure to radon or thoron is present. The units and methods for achieving compliance with certain regulatory provisions have been previously discussed in detail.

9. Reports to individuals [§§835.801(a), (b), (c), and (d)]:

   The requirements to report the results of monitoring for occupational exposure to radon and thoron remain unchanged. The information required under §835.702(c) includes the data as specified under the exemption to §835.702(c)(4)(iii).

A summary of those exemptions granted and those exemptions denied, which apply to all four contractors regardless of whether or not their individual exemption request addressed a specific prevision is shown below:

Exemptions granted	Exemptions denied	
§835.1(b)(6)	§835.202(a)(1)	§835.603(d)
§835.2(a)	§835.202(a)(2)	§835.701(a)
§835.4	§835.202(b)	§835.702(a)
§835.202(c)	§835.203(a)	§835.702(c)(1)
§835.402(c)(1)	§835.206(a)	§835.702(c)(2)
§835.403(a)(1)	§835.206(c)	§835.702(c)(4)(i)
§835.702(c)(4)(iii)	§835.208	§835.702(c)(4)(ii)
Appendix C	§835.209(b)	§835.702(c)(5)
	§835.209(c)	§835.702(c)(6)
	§835.401(a)(1)	§835.702(c)(6)
	§835.402(c)(2)	§835.702(d)
	§835.402(c)(3)	§835.702(f)
	§835.402(d)	§835.801(a)
	§835.403(a)(2)	§835.801(b)
	§835.403(a)(3)	§835.801(c)
	§835.404(f)	§835.801(d)
		Appendix A, Footnote 4

Applicable 10 CFR 835 Requirement Text

§835.1 (b)(6) The requirements of this part do not apply to: Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from voluntary participation in medical research programs.

§835.2(a) *Airborne radioactivity area* means any area where the measured concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed 10 percent of the DAC values listed in Appendix A or Appendix C of this part.

Background means radiation from:

(i) Naturally occurring radioactive materials, which have not been technologically enhanced;

(ii) cosmic sources;

(iii) global fallout as it exists in the environment (such as from the testing of nuclear explosive devices);

(iv) radon and its progeny in concentrations or levels existing in buildings or the environment which have not been elevated as a result of current or prior activities; and

(v) consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation.

Occupational exposure means an individual's exposure to ionizing radiation (external and internal) as a result of that individual's work assignment. Occupational exposure does not include planned special exposures, exposures received as a medical patient, background radiation, or voluntary participation in medical research programs.

Radiological worker means a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 0.1 rem (0.001 sievert) per year total effective dose equivalent.

§835.4 Unless otherwise specified, the quantities used in the records required by this part shall be clearly indicated in special units of curie, rad, or rem, including multiples and subdivisions of these units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), are only provided parenthetically in this part for reference with scientific standards. These SI units are not authorized for use in records required under this part.

NOTE: Although WL units are not discussed in this paragraph, Appendix D does specify their use and is, therefore, an acceptable unit under this provision.

§835.202(a) The occupational exposure to general employees resulting from DOE activities other than planned special exposures under §835.204 and emergency situations under §835.1302 shall be controlled so the following annual limits are not exceeded:

(1) A total effective dose equivalent of 5 rems (0.05 sievert).

(2) The sum of the deep dose equivalent for external exposures and the committed dose equivalent to any organ or tissue other than the lens of the eye of 50 rems (0.5 sievert).

§835.202(b) All occupational exposure received during the current year shall be included when demonstrating compliance with §835.202(a).

§835.202(c) Exposures from background, therapeutic and diagnostic medical radiation, and voluntary participation in medical research programs shall not be included in dose records or in the assessment of compliance with the occupational exposure limits.

§835.203(a) The total effective dose equivalent during a year shall be determined by summing the effective dose equivalent from external exposures and the committed effective dose equivalent from intakes during the year. For purposes of compliance with this part, deep dose equivalent to the whole-body may be used as effective dose equivalent for external exposures.

§835.206(a) The dose equivalent limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker is 0.5 rem (0.005 sievert).

§835.206(c) If the dose equivalent to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 sievert) by the time a worker declares pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period.

§835.207 Any minor exposed to radiation and/or radioactive material during direct on-site access at a DOE site or facility shall not exceed 0.1 rem (0.001 sievert) total effective dose equivalent in a year.

§835.208 Any member of the public exposed to radiation and/or radioactive material during direct on-site access at a DOE site or facility shall not exceed 0.1 rem (0.001 sievert) total effective dose equivalent in a year.

§835.209(b) With regard to inhalation exposures and external exposures from airborne radionuclides, compliance with this part shall be demonstrated through

conformity with §835.101 and §835.202, which establishes the applicable regulatory limits.

§835.209(c) The estimation of internal dose shall be based on bioassay data rather than air concentration values unless bioassay data are:

(1) unavailable;

(2) inadequate: or

(3) internal dose estimates based on representative air concentration values are demonstrated to be as or more accurate.

§835.401 (a)(1) Monitoring of individuals and areas shall be performed to demonstrate compliance with the regulations in this part.

§835.402(c) For the purpose of monitoring individual exposures to internal radiation, internal dose evaluation programs (including routine bioassay programs) shall be conducted for:

(1) Radiological workers who, under typical conditions, are likely to receive 0.1 rem (0.001 sievert) or more committed effective dose equivalent, and/or 5 rems (0.05 sievert) or more committed dose equivalent to any organ or tissue, from all occupational radionuclide intakes in a year;

(2) declared pregnant workers likely to receive an intake resulting in a dose equivalent to the embryo/fetus in excess of 10 percent of the limit stated in §835.206; or

(3) minors and members of the public who are likely to receive, in 1 year, an intake resulting in a committed effective dose equivalent in excess of 50 percent of the limits stated in §835.207 or §835.208, respectively.

§835.402(d) Internal dose evaluation programs shall be adequate to demonstrate compliance with §835.202.

§835.403(a) Measurements of radioactivity concentrations in the ambient air of the workplace shall be performed as follows:

(1) Air sampling shall be performed in occupied areas where, under typical conditions, an individual is likely to receive an annual intake of 2 percent or more of the specified ALI values. For a given radionuclide and lung retention class, the ALI is the product of the DAC listed in Appendix A of this part and the constant 2.4×10^9 mL. Samples shall be taken as necessary to detect and evaluate the level or concentration of airborne radioactive material at work locations.

(2) Real-time air monitoring using continuous air monitors as defined in §835.2, shall be performed in normally occupied areas where an individual is likely to be exposed to a concentration of airborne radioactivity exceeding 1 DAC as specified in Appendix A of this part or where there is a need to alert potentially exposed individuals to unexpected increases in airborne radioactivity levels.

(3) For the airborne radioactive material that could be encountered, real-time air monitors shall have alarm capability and sufficient sensitivity to alert potentially exposed individuals that immediate action is necessary in order to minimize or terminate inhalation exposures.

§835.404(f) Appropriate monitoring to detect and prevent the spread of contamination shall be performed by individuals exiting radiological areas established to control removable contamination and/or airborne radioactivity.

§835.603(d) Each access point to a radiological area (as defined in §835.2) shall be posted with conspicuous signs bearing the wording provided in this section.

(d) *Airborne Radioactivity Area.* The words "Caution, Airborne Radioactivity Area" shall be posted for any occupied area in which airborne radioactivity levels exceed, or are likely to exceed, 10 percent of the DAC value listed in Appendix A or Appendix C of this part.

§835.70l(a) Records shall be maintained to document compliance with this part and with radiation protection programs required by §835.101.

§835.702(a) Records shall be maintained to document doses received by all individuals for whom monitoring was required pursuant to §835.402 and doses received during planned special exposures, accidents, and emergency conditions.

§835.702(c) The records required by this section shall:

(1) Be sufficient to evaluate compliance with §835.202.

(2) be sufficient to provide dose information necessary to complete reports required by subpart I of this part and by departmental requirements for occurrence reporting and processing.

(3) include the following quantities for internal dose resulting from intakes received during the year:

(i) Committed effective dose equivalent; and

(ii) committed dose equivalent to any organ or tissue of concern; and

(iii) estimated intake and identity of radionuclides.

(4) Include the following quantities for the summation of the external and internal dose:

(i) Total effective dose equivalent in a year;

(ii) for any organ or tissue assigned an internal dose during the year, the sum of the deep dose equivalent from external exposure and the committed dose equivalent to that organ or tissue; and

(iii) cumulative total effective dose equivalent received from external and internal sources while employed at the site or facility, since January 1, 1989.

(5) Include the dose equivalent to the embryo/fetus of a declared pregnant worker.

§835.702(d) Documentation of all occupational exposure received during the current year shall be obtained when demonstrating compliance with §835.202(a). In the absence of formal records of previous occupational exposure during the year, a written estimate signed by the individual may be accepted.

§835.702(f) The records specified in this section that are identified with a specific individual shall be readily available to that individual.

§835.801(a)-(d)

(a) Radiation exposure data for individuals monitored in accordance with §835.402 shall be reported as specified in this section. The information shall include the data required under §835.702(c). Each notification and report shall be in writing and include: the DOE site or facility name, the name of the individual, and the individual's social security number or employee number.

(b) Upon the request from an individual terminating employment, records of exposure shall be provided to that individual as soon as the data are available, but not later than 90 days after termination. A written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested.

(c) Each DOE- or DOE-contractor-operated site or facility shall, on an annual basis, provide a radiation dose report to each individual monitored during the year at that site or facility in accordance with §835.402.

(d) Detailed information concerning any individual's exposure shall be made available to the individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a).

Appendix A, Footnote 4

These values are appropriate for protection from radon combined with its short-lived daughters and are based on information given in ICRP Publication 32: Limits for Inhalation of Radon Daughters by Workers and Federal Guidance Report No. 11: Limiting Values of Radionuclide Intake and Air Concentrations, and Dose Conversion Factors for Inhalation, Submersion, and Ingestion (EPA 520/1-88-020). The values given are for 100 percent equilibrium concentration conditions of the radon daughters with the parent. To allow for an actual measured concentration or a demonstrated equilibrium concentration, the values given in this table should be multiplied by the ratio (100 percent/actual percent) or (100 percent/demonstrated percent), respectively. Alternatively, the DAC values for Rn-220 and Rn-222 may be replaced by 1WL* and 1/3 WL*, respectively, for appropriate limiting of daughter concentration. Because of the dosimetric considerations for radon, no f_1 or lung clearance values are listed.

*A "Working Level" (WL) is any combination of short-lived radon daughters, in one liter of air without regard to the degree of equilibrium that will result in the ultimate emission of 1.3E+05 MeV of alpha energy.

Radiological Control Coordinating Committee Subcommittee on Radon

Six issues were raised by the RCCC Subcommittee on Radon regarding occupational exposure to radon and thoron and their progeny. These issues are:

1. There is no bioassay for radon and thoron and their progeny.

2. Doses are not currently being assigned for occupational exposure to radon, thoron, and their progeny.

3. Compliance with 10 CFR 835 has not been achieved for the requirements for monitoring, dose assessment, records, and reporting.

4. There is significant debate on the validity of DOE's current DAC for radon and thoron. The new ICRP limits (dose conversion convention) suggest that DOE's DAC is 2.5 times too low. A factor of 2.0 is supported by the National Academy of Sciences' (NAS) 1988 Biological Effects of Ionizing Radiation (BEIR IV) report (now dated). ICRP is maintaining their current position presented in ICRP Publication 65. The IAEA has published IAEA Safety Series No. 115-I, which contains recommendations on thoron and endorses the ICRP 65 recommendations on radon. The NAS has convened BEIR VI to further study this issue.

5. Monitoring for exposure to radon, thoron, and their progeny is impractical at 1 percent and 2 percent of current DAC (1/3 WL = 3E-08 μCi/mL equilibrium equivalent radon concentration = 30 pCi/L), as required for members of the public, visitors and radiological workers, respectively.

   The determination of background is a problem, since it fluctuates diurnally and seasonally, and is comparable to the trigger levels for monitoring.

6. Guidance from DOE is needed for:

   - conversion of pCi/L and time, or WLM, to dose
   - choice of default values of equilibrium factors

Conversion of Radon/Thoron Exposure to Dose

For, the purpose of demonstrating compliance with the occupational exposure limits contained in §835.202, occupational exposure to radon and thoron must be reported and recorded in terms of committed effective dose equivalent.

Appendix A, Footnote 4 provides DAC in terms of WL for Rn-220 and Rn-222 in equilibrium with their daughters of 1 WL and 1/3 WL, respectively. These would correspond to ALIs of 12 WLM and 4 WLM.

Note: The term WLM is defined as the amount of alpha particle energy potentially emitted by any mixture of radon or thoron progeny per unit volume of air, reported in units of working levels, multiplied by the worker's exposure time. Therefore, the exposure times for workers exposed to radon or thoron and their progeny must be tracked to determine their exposure in WLM.

The values for radon and thoron in Appendix A of 10 CFR 835 are based on continuous occupational exposure at 1 DAC (e.g., 170 hours per month) resulting in a committed effective dose equivalent of 5 rem. Alternately, the ICRP Publication 65 implies a dose conversion for 4 WLM radon exposure (12 WLM thoron exposure) to 2 rem committed effective dose equivalent. The National Council on Radiation Protection and Measurement has not yet endorsed the values given in ICRP Publication 65.

For compliance with 10 CFR 835, the conversion of WLM exposure to committed effective dose equivalent for radon and thoron and their progeny should be consistent with the bases of Appendix A of 10 CFR 835. Therefore, the following conversions from WLMs to committed effective dose equivalent are considered appropriate, assuming 100 percent equilibrium:

- For radon (Rn-222) and its progeny: 1.25 rem per WLM.
- For thoron (Rn-220) and its progeny: 0.41 rem per WLM.

WLM are determined using the following equation:

$$WLM = \frac{C_{Rn} F_{eq} T}{KN}$$

C_{Rn} is the Rn-222 and Rn-220 concentration (including background) for the area occupied by the exposed individual as measured in picocuries per liter (pCi/L) (note: 1pCi/L = lE-9 μCi/mL).

F_{eq} is the progeny equilibrium correction factor. NCRP Report No. 45 provides guidance on the ratio of radon to its short lived daughters in indoor and outdoor atmospheres. When choosing a progeny equilibrium correction factor, contractors must document the technical rationale for their choice.

T is the time the exposed individual spends in the area in hours (h).

K is a correction factor derived from:

- 100 pCi/L per WL Rn-222 and 170 working hours per month, (1.7×10^4); or
- 7.43 pCi/L per WL Rn-220 and 170 working hours per month, (1.26×10^3).

N is any other modifiers, which should be credited (i.e., respiratory protection factors, ventilation factors).

These values are based on stochastic ALIs. The determination of the committed dose equivalent to the lungs ($CDE_{\underline{\text{T-Lungs}}}$) from occupational exposure to radon or thoron and their progeny is determined by taking the CEDE and dividing by the tissue weighting factor for the lungs (per §835.2(b), the tissue weighting factor, w_T, for the 1ungs is 0.12).

Therefore:

$$CDE_{T-Lungs} = \frac{CEDE}{0.12}$$

EXEMPTION DECISION

Pursuant to Title 10 Code of Federal Regulations, part 820.61 (10 CFR 820.61), the Assistant Secretary for Environment, Safety and Health is authorized to exercise authority on behalf of the Department of Energy (DOE) with respect to requests for exemptions from nuclear safety rules relating to radiological protection of workers, the public, and the environment.

The Office of Legacy Management contractor, S.M. Stoller Corporation (Stoller), filed a request with the Department for an exemption from certain requirements contained in 10 CFR 835, "Occupational Radiation Protection," for monitoring, reporting, posting, and assessing dose from occupational exposure to radon and/or thoron, and their progeny. An exemption from these provisions was originally granted to RUST Geotech, Inc., February 9, 1996 (exemption decision GPO-10 CFR 835-EX-02). The original exemption was updated March 16, 1999, in response to the November 4, 1998, amendment to 10 CFR 835 and subsequently granted to Wastren Inc., March 23, 2000. The original exemption request states that the exemption is authorized by law; will not present undue risk to the public health and safety, the environment, or facility workers; and is consistent with the safe operation of a DOE nuclear facility. In addition, because Stoller performs similar activities at similar locations to those that were performed by RUST Geotech, Inc., and the isotopic mix of radioactive contaminants remains unchanged since the original exemption was issued, the exemption request meets the special circumstances provided in 10 CFR 820.62.

Based on a review of the supporting documentation, relief from provisions 835.(1)(b)(6), 835.2(a), 835.4, 835.202(c), 835.402(c)(1), 835.403(a)(l), 835.702(c)(4)(iii), and Appendix C of 10 CFR 835 as they apply to monitoring, reporting, posting, and assessing dose from occupational exposure to radon and/or thoron, and their progeny, is justified. The technical position that accompanied the exemption granted to RUST Geotech, Inc., February 9, 1996, which discusses the rationale for upon which the exemption decision is based, remains valid.

Exemptions Granted

§835.(1)(b)(6), §835.2(a), §835.4, §835.202(c), §835.402(c)(1), §835.403(a)(l), §835.702(c)(4)(iii), and Appendix C.

Based on the foregoing, I hereby approve the Stoller Request for Exemption on a permanent basis commencing on the date of signature set forth below subject to the following conditions:

- The contractor utilizes the revised definitions for airborne radioactivity areas, controlled areas, occupational exposures, and radiological workers;

- For the purpose of determining occupational exposure of individuals from radon and thoron, the contractor does not exclude background levels of these radionuclides from individual occupational exposure monitoring results; and

- The contractor utilizes the revised thresholds for monitoring radiological workers' exposure to radon and thoron and their progeny of 500 mrem committed effective dose equivalent, and the revised air sampling threshold of 10 percent annual limit on intake.

These exemptions will no longer be effective when the Department revises regulatory provisions pertaining to the specific provisions for which the exemptions are granted.

Pursuant to 10 CFR 820.66, Stoller has 15 days from the date of the filing of this decision to file a Request to Review with the Secretary. The Request to Review shall state, specifically, the respects in which the exemption determination is claimed to be erroneous, the grounds of the request, and the relief requested. If no Request to Review is submitted, the exemption decision becomes a final order 15 days after it is filed.

Beverly A. Cook
Assistant Secretary
Environment, Safety and Health

APPROVE Beverly A Cook

DISAPPROVE _____

DATE 3/11/04